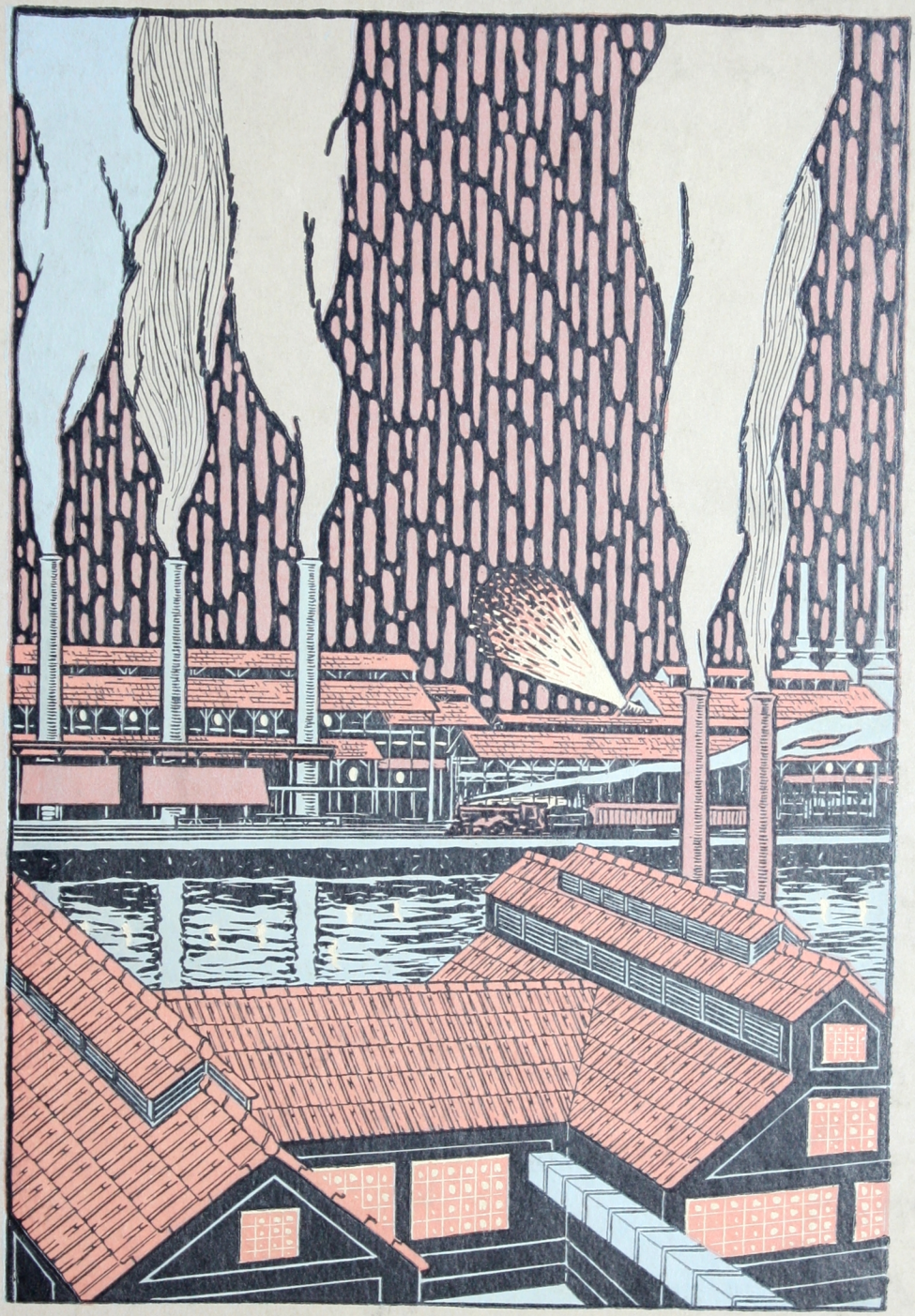
899-12.

9/7/23.



BONANZA "CEMENTILE" ROOFING

Bonanza "Cementile" Roofing

BONANZA CEMENTILE

(Registered Trade Mark)

AMERICAN CEMENT TILE MANUFACTURING COMPANY

INCORPORATED 1902

PITTSBURGH - - PENNSYLVANIA

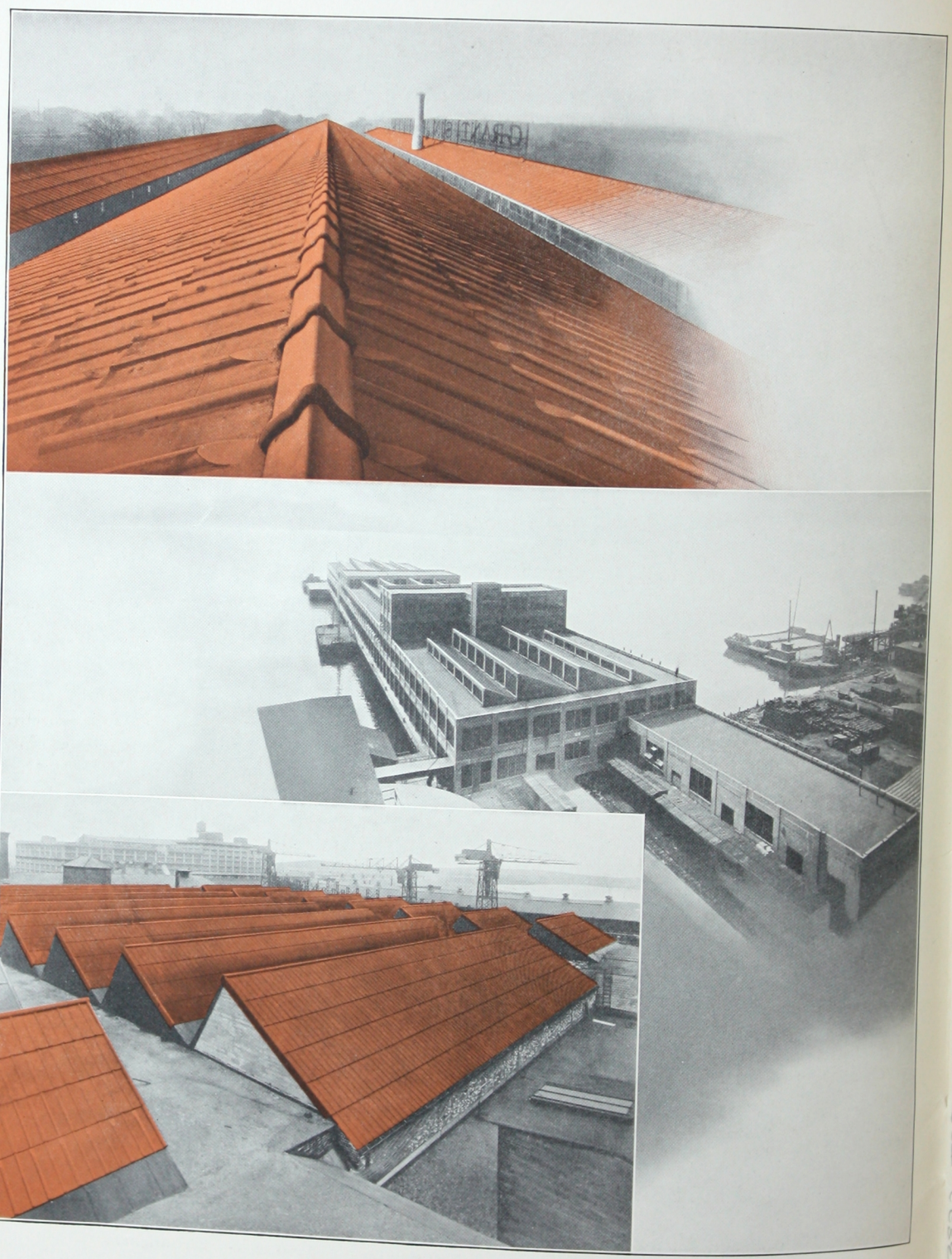
PLANTS: Wampum, Pa. Lincoln, N. J. Birmingham, Ala.
OFFICES: Pittsburgh - New York - Philadelphia - Atlanta - Birmingham

Adaptable To All Types Of Construction

Interlocking, Flat, and Channel "Cementile"

Pitched, Flat, and Saw-Tooth Roofs

More Than 80,000,000 Square Feet Of Bonanza "Cementile" Laid During Past Twenty Years



Bonanza "Cementile" Roofing

INTRODUCTION

BONANZA "Cementile" are very large, light, steel-reinforced cement roofing tile, all factory-made and cured—a specialized product brought to its highest state of development.

Three Distinct Types

They are furnished in three distinct types; namely, Interlocking Tile, Flat Tile, and Channel Tile, and all necessary trimmings such as Ridge Tile (of various types), Skylight or Glass Insert Tile, Flashing Tile, Collar Tile, etc.

The Tile are laid directly upon the open roof purlins which are spaced apart on a span suitable for the type of "Cementile" selected.

No "Forms" Required

In no case is sheathing or other base support required; this eliminates excessive weight and insures greatest economy in the design of the supporting structure. Total roof load need not exceed 45 pounds per square foot for Interlocking Tile, and 50 pounds per square foot for Flat Tile.

All in all, Bonanza "Cementile" Roofs are roofs of economy and quality, speedily laid, with guaranteed results backed by an established reputation as manufacturing and contracting engineers over a period exceeding twenty years.

Interlocking Tile

Bonanza Interlocking Tile are designed for pitched roofs. Laid directly on purlins spaced approximately 4'-0" apart, they are fire and water proof, the finished surface having a particularly pleasing red Spanish tile effect. Like Flat and Channel Tile, they are strong and light.

Flat Tile Channel Tile

Bonanza Flat Tile and Channel Tile are designed for flat roof construction or for pitched roofs where it is desired to waterproof with composition covering. These tile are also laid directly on purlins; the 1½" Flat Tile for standard spans of 5'-0", and Channel Tile for the longer spans, are a combination of great strength and lightness, which eliminates all form work and assures speed in erection with positive results.

There is little doubt that the roofing problem is the most important in the design of a building of whatever type; mill, machine, foundry, theatre, garage, pier shed, etc. Aside from considerations of maintenance, efficiency, and fire resistance, it is the roof which protects men and materials, machinery and equipment.

The pages following, with the illustrations and the sketches, give general and detailed information that will aid in the correct solution of the roofing problem.

American Cement Tile Manufacturing Company

Bonanza "Cementile" Roofing

SERVICE

Engineering Co-Operation

THE AMERICAN Cement Tile Manufacturing Company maintains an Engineering Department, the services of which are available to its clientele without charge. Owners, designing engineers, architects, and others will find that the cooperation of this department will prove of great economic value in the development of their plans. It is suggested that inquiries be made and recommendations requested at the earliest possible stage of the contemplated work.

Roof Design

This department will, if desired, design the roof construction where the products of the company are to be installed. It is especially desirable that the company be consulted in order to avoid the complications that may arise, particularly in the solution of unusual problems.

Proposals and Estimates

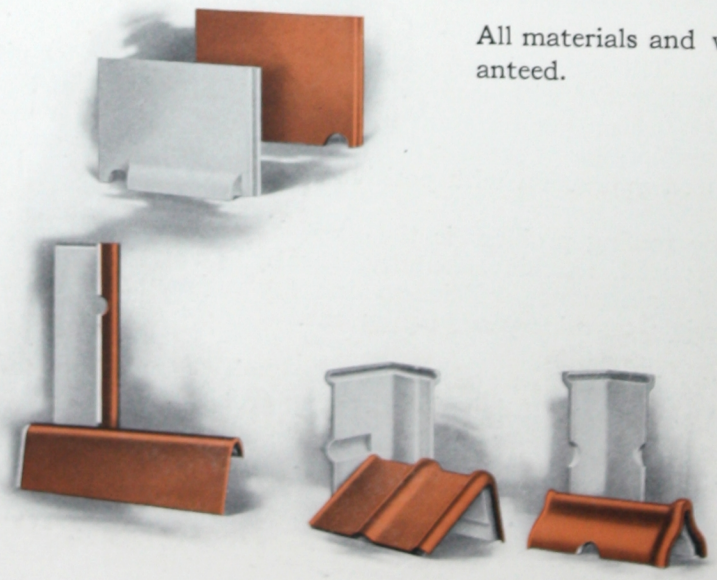
Definite proposals or approximate estimates will be furnished—as much information as possible should accompany inquiries.

Erection

The erection of the products of the American Cement Tile Manufacturing Company is performed *preferably* by the erection crews maintained by the company itself; the use of experienced and efficient erectors being of the utmost importance for satisfactory results.

Guarantee

All materials and workmanship are fully guaranteed.



Bonanza Interlocking Tile

Description

INTERLOCKING Tile are designed for pitched roofs and form a finished, water-tight and fireproof covering. They are laid directly upon the roof purlins, no sheathing or other forms or supports being required.

Standard Interlocking Tile are 26″ wide by 52″ long (24″ x 48″ exposed surface) by 1″ thick and weigh approximately 16 pounds per square foot; they are properly reinforced with a galvanized steel fabric and develop a breaking load of 350 pounds per square foot, which allows for even more than a safety factor of 5.

The tile are held in place on the purlins by means of a 1″ hanger along the full width of the top of each tile.

Application

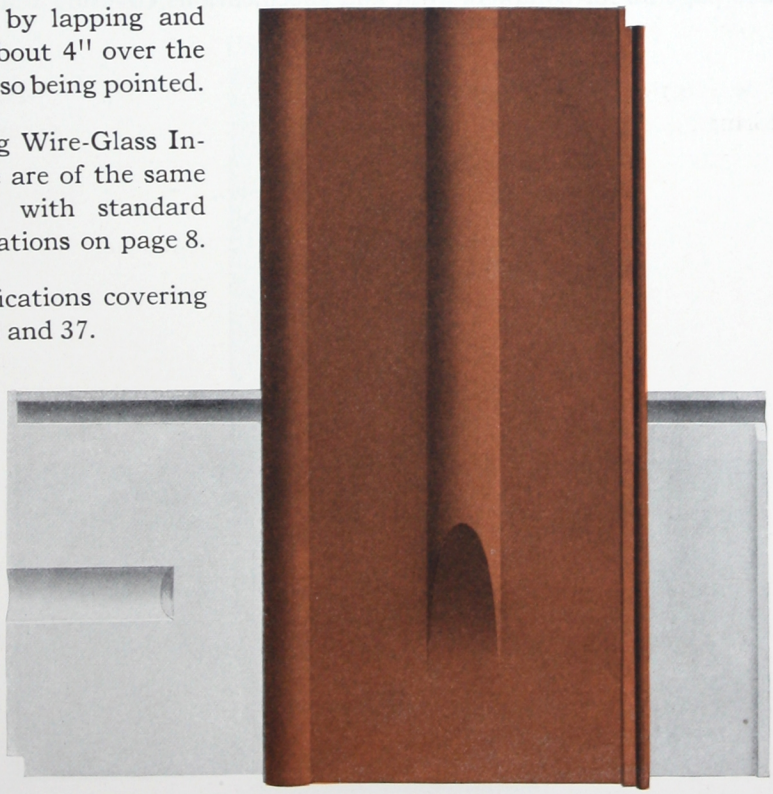
When placed on a roof, the *roll* of one tile interlocks with the *rabbet* on the next; the joints thus formed are pointed with Lastik Cement of our own manufacture.

The cross joints are formed by lapping and staggering each row of tile about 4″ over the next lower row, these joints also being pointed.

Sky-Light Tile

For sky-lighting, Interlocking Wire-Glass Insert Tile are furnished; these are of the same design as and interchange with standard Interlocking Tile—see illustrations on page 8.

For complete data and specifications covering Interlocking Tile see pages 36 and 37.



Bonanza Flat Tile

Description

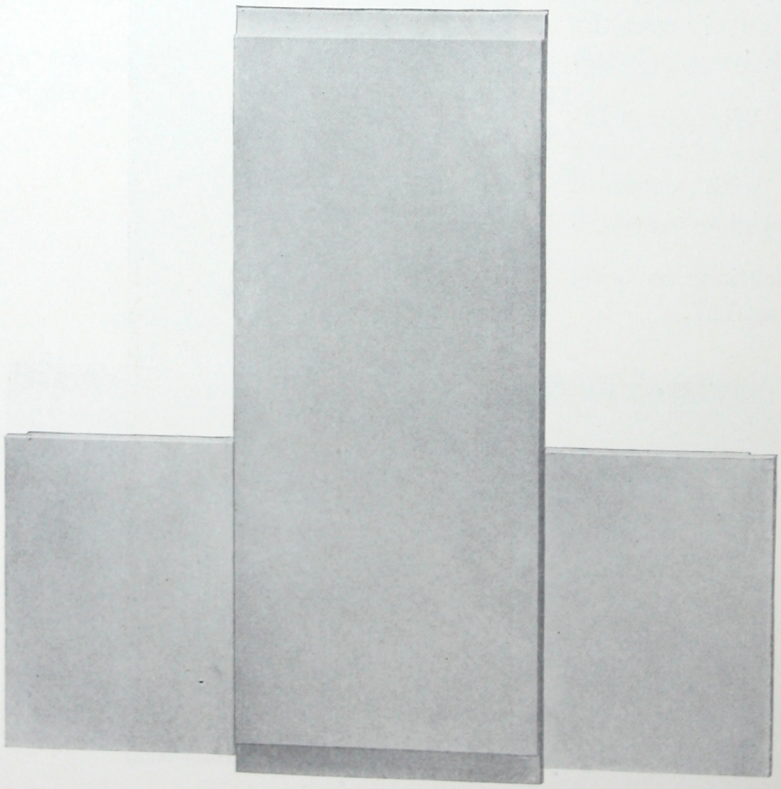
FLAT Tile are designed for both flat and pitched roofs; the application of a standard composition roofing is required to make the roof water-tight.

Standard Flat Tile are 1½″ thick, 24″ wide and 60″ long, weigh approximately 16 pounds per square foot, and properly reinforced. The standard purlin spacing is 5 feet; where necessary, other lengths are furnished for spacings over and under 60″ and for flashing.

Application

The ends, which are offset to a depth of ¼ inch, are laid directly upon the flange of I-beam purlins, after which the joints are properly pointed and the entire roof covered with some form of composition roofing. (Channel sections having the equivalent strength of the I-beams may be used for purlins, but the flanges should be not less than 2½″).

See page 38 for complete data and specifications covering Flat Tile.



Bonanza Channel Tile

Description

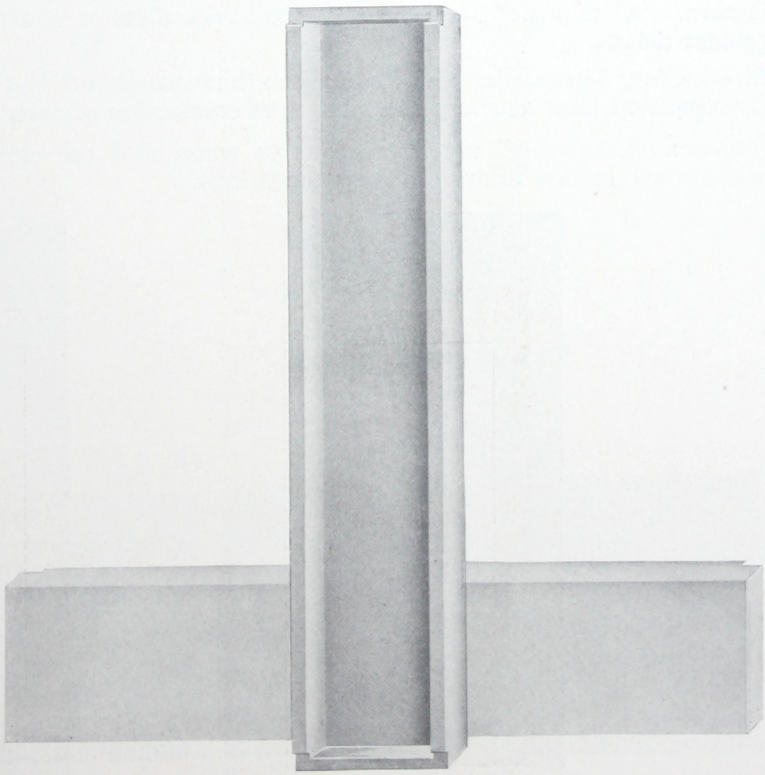
CHANNEL Tile are designed to meet the demands of the present tendency to the use of extra wide spans in flat roof construction. They are also used extensively on saw-tooth roofs.

Standard Channel Tile are 18″ wide by 96″ in length, and reinforced with bars and galvanized steel fabric; the webs of these tile are 1″ thick, and the flanges are $3\frac{3}{4}$″ deep with a thickness of $1\frac{5}{8}$″. Special Channel Tile are furnished for spans over and under 96″.

Application

The ends, which are offset to a depth of $\frac{1}{4}$ inch, are laid directly upon the flange of I-beam purlins, after which the joints are properly pointed and the entire roof covered with some form of composition roofing. (Channel sections having the equivalent strength of the I-beams may be used for purlins).

For complete data and specifications covering Channel Tile see page 39.



Bonanza "Cementile" Roofing

ADVANTAGES

Economy

THE cost of Bonanza "Cementile" Roofing is less than for any other fireproof roofing. All installations are fully guaranteed. The upkeep is nil, owing to the absence of the usual maintenance causes. Being laid directly on steel purlins, no sheathing, nailing strips, metal straps or fastenings are required.

Weight

On account of the economic design and faultless workmanship, the weight of Bonanza "Cementile" Roofing is nearly fifty per cent less than that of poured concrete slabs. In designing trusses and purlins, the total roof load need not exceed 45 pounds per square foot for Interlocking Tile and fifty pounds for Flat Tile, which keeps the weight and cost of steel work down to a minimum.

Strength

Bonanza "Cementile" Roofs will carry all roof loads usually encountered. The breaking load shown by tests for the New York Building Department, held at Columbia University, was determined at 350 pounds per square foot.

Adaptability

There is a Bonanza "Cementile" adaptable to any type of roof construction and for any size building.

Erection

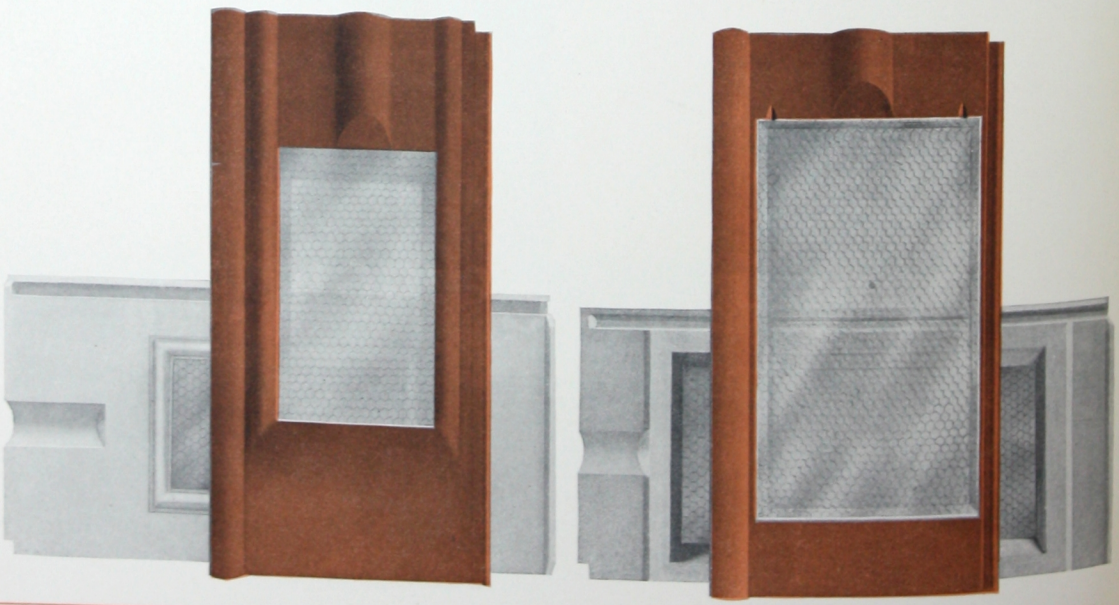
All field work is done *preferably* by our own experienced men, which insures absolute satisfaction. "Cementile" Roofs may be laid regardless of weather conditions, which insures against delays.

Expansion Joints

Interlocking Tile overlap and interlock in the formation of the complete roof, thus providing an expansion joint at every side and cross connection of each individual unit.

Long Life

Bonanza "Cementile" are impervious to water and the elements, are proof against fire and are everlasting under ordinary conditions.



Bonanza Interlocking Sky-Light Tile

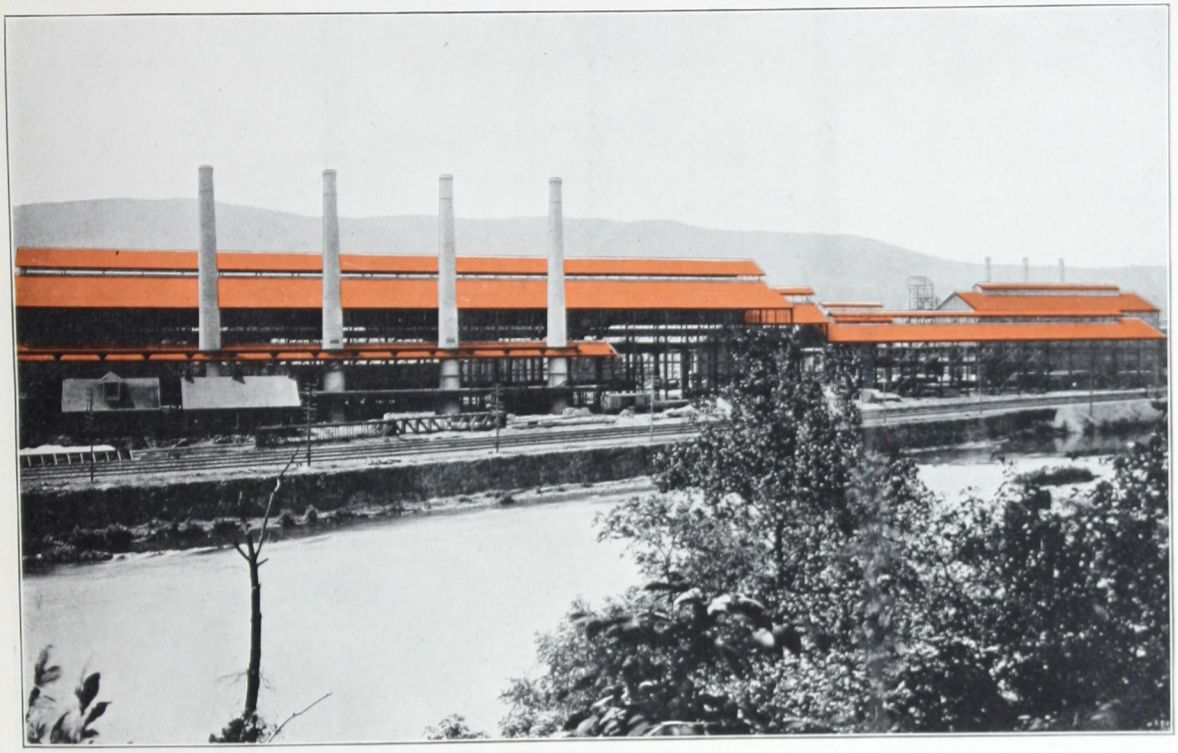
Installations
Bonanza "Cementile" Roofing

BONANZA CEMENTILE

(Registered Trade Mark)

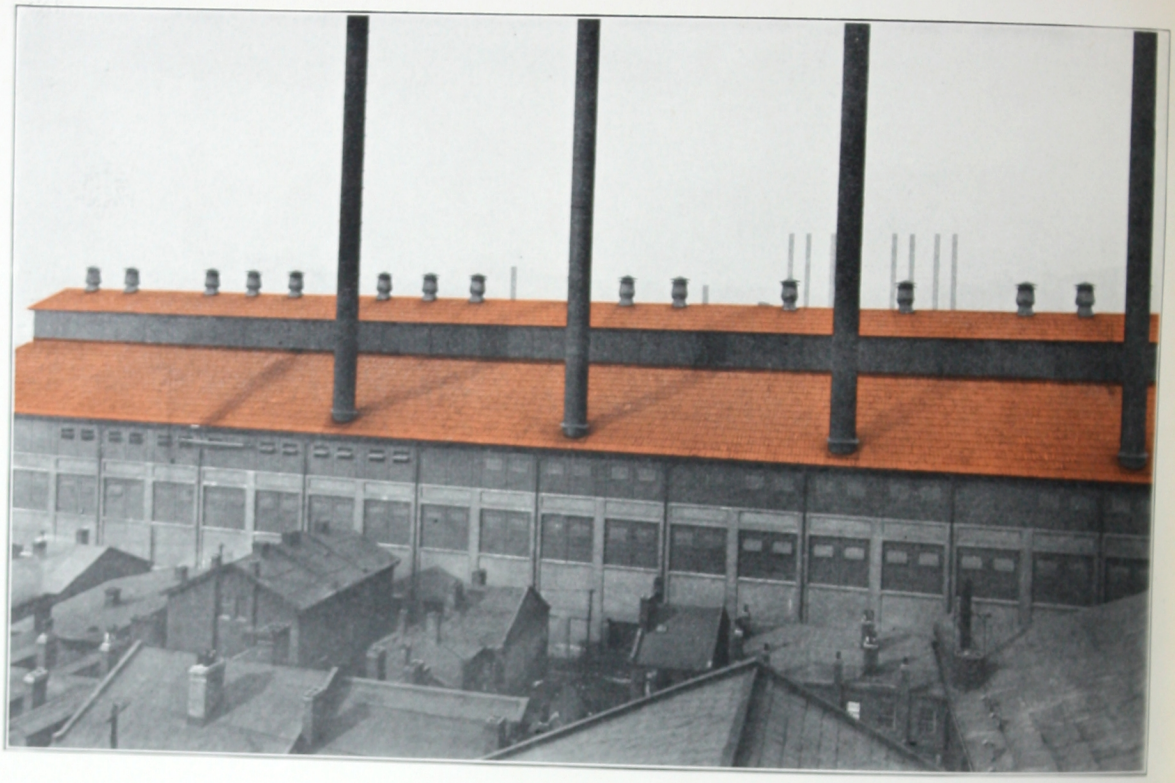
Watertown Arsenal, Watertown, Mass., Stone & Webster Const. Co., Engineers and Contractors. Ten buildings of approximately 470,000 sq.ft. total area are covered with Bonanza "Cementile."

This illustration shows the bottom side of a Bonanza Interlocking "Cementile" Roof. Plant of Toledo Glass Company, Toledo, Ohio Three installations have been made for this company.



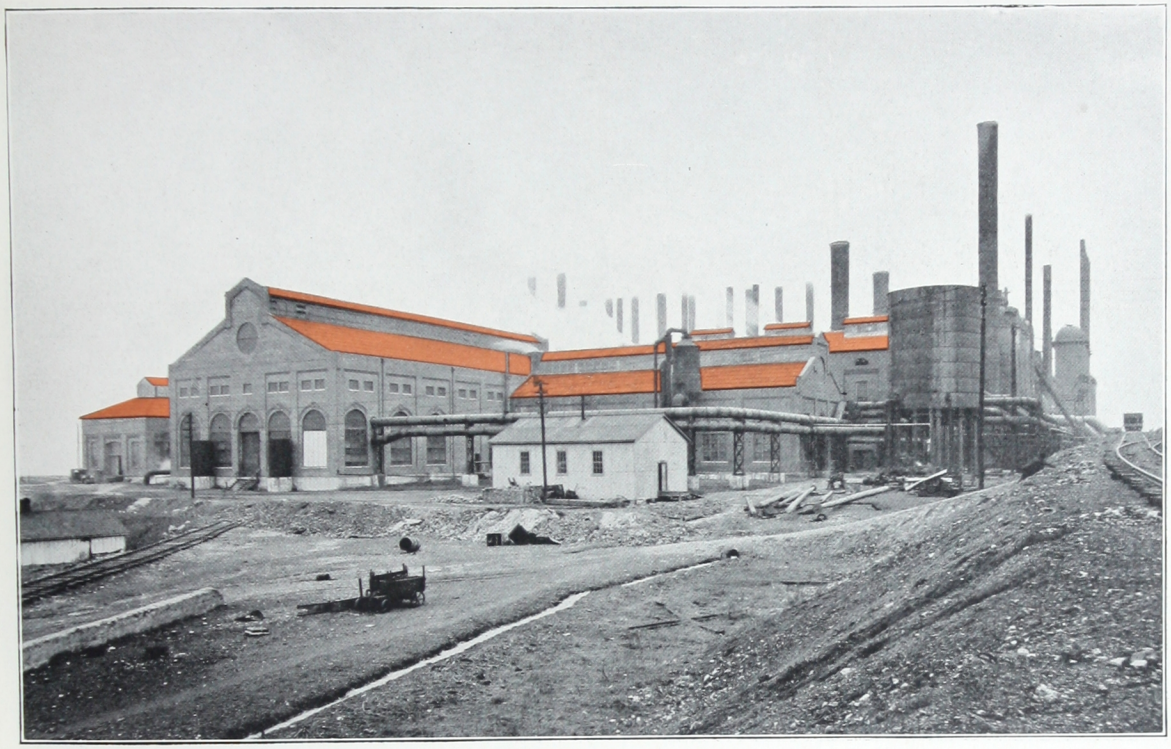
Bethlehem Steel Company, South Bethlehem, Pa. Sixty-three of this company's buildings having a total area of about 850,000 sq. ft., are covered with Bonanza "Cementile."

Part of the approximately 850,000 sq. ft. of Bonanza "Cementile" Roofing installed on 19 buildings for Baldwin Locomotive Works, Eddystone, Pa.



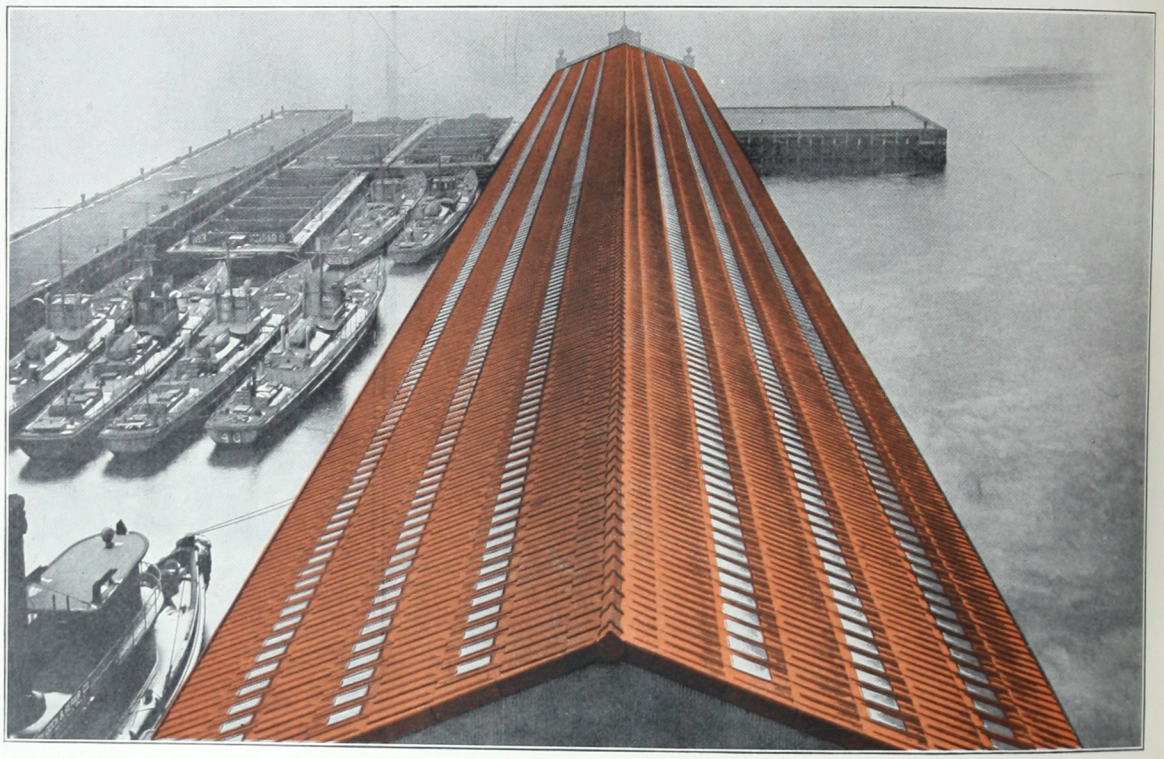
Park Works of Crucible Steel Co., Pittsburgh, Pa. More than 2,600,000 sq.ft. of Bonanza "Cementile" has been used by this company.

Midland, Pennsylvania plant of Crucible Steel Company. Sixty-two installations have been made for this company.

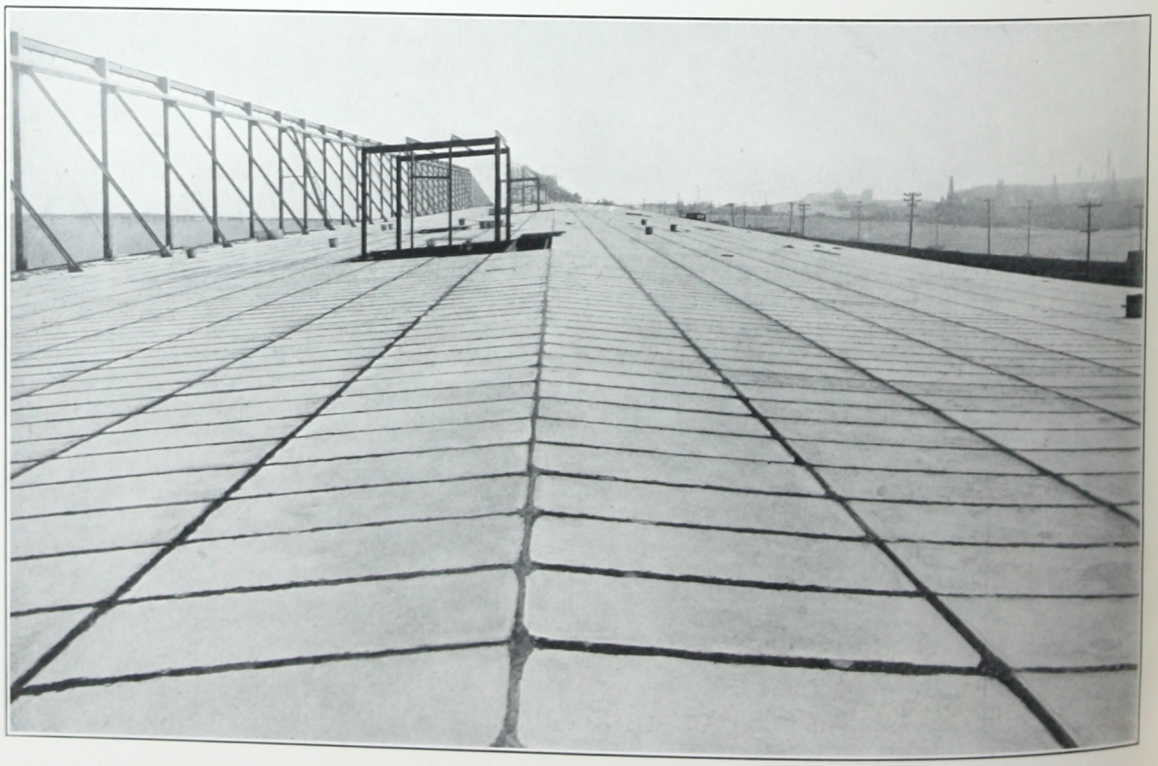


Woodward Iron Company, Birmingham, Ala., have used Bonanza "Cementile" on eight of their buildings.

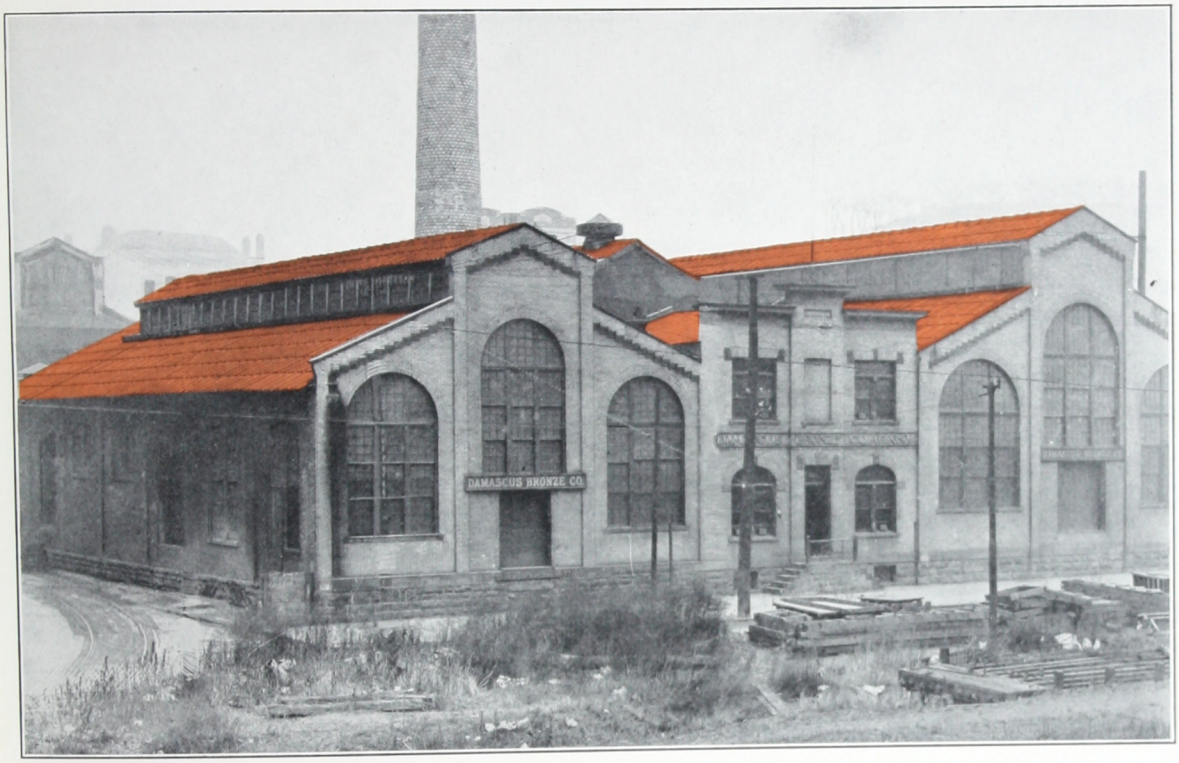
General Electric Company, West Lynn, Mass. "G-E" has used more than 370,000 sq. ft. of Bonanza "Cementile" on 16 separate buildings.



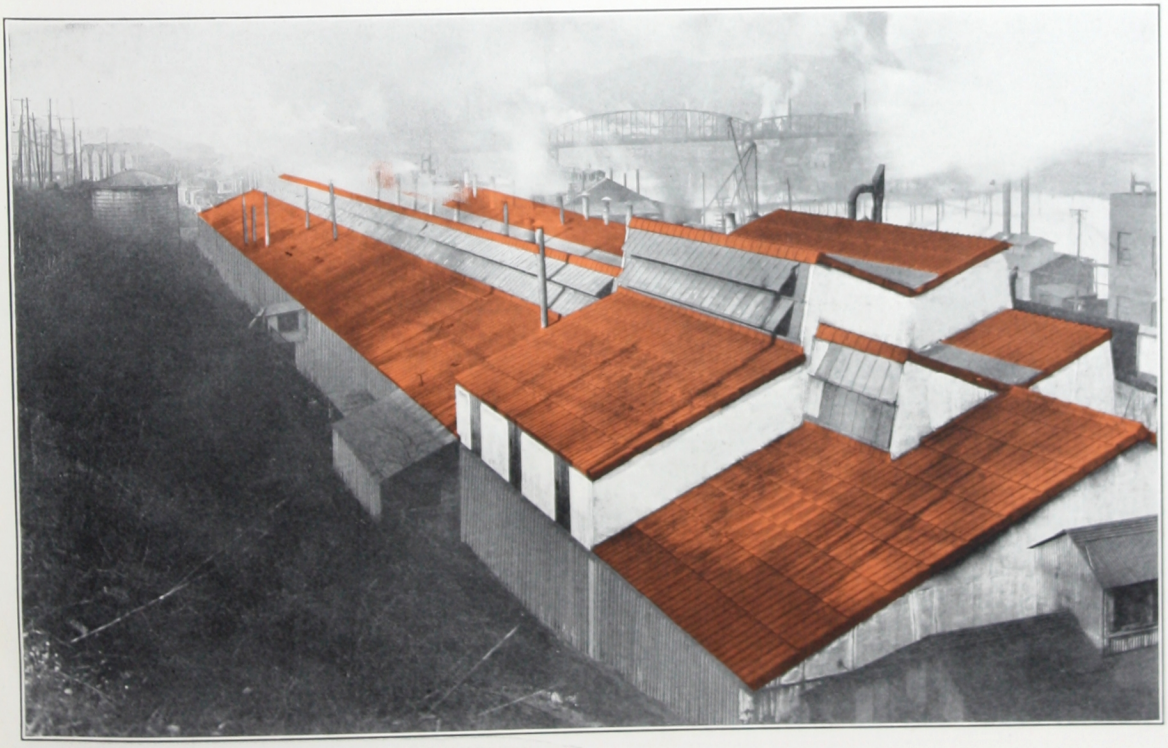
Bonanza Skylight "Cementile" on a pier shed of E. W. Bliss Co., Brooklyn, N. Y. W. Pfaendler, Engineer. This company has six buildings with an approximate area of 200,000 sq.ft. covered with Bonanza "Cementile."



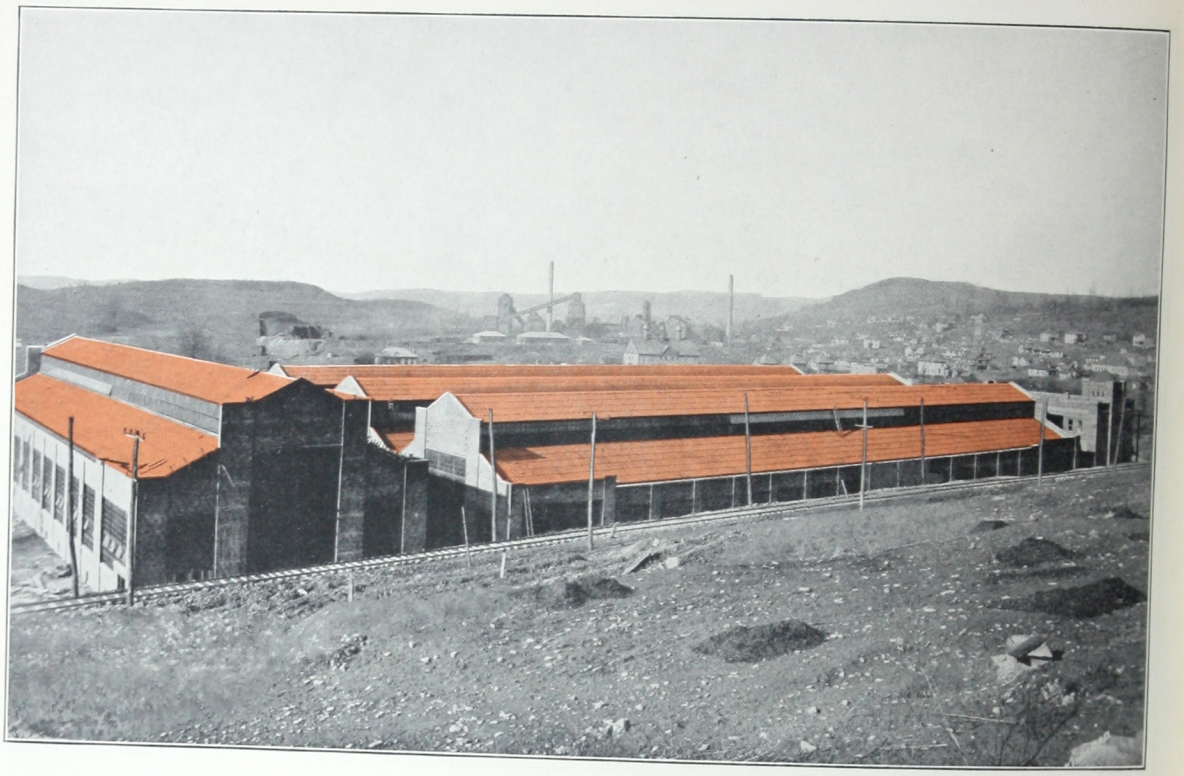
Showing Bonanza Flat Tile ready for waterproof covering. Lehigh Valley R. R. Co. Pier, Jersey City, N. J. Henry Steers,Inc., Contractors. Four buildings with total area of about 110,000 sq. ft. have been covered with Bonanza "Cementile."



The Damascus Bronze Company of Pittsburgh, Pa., have five buildings covered with Bonanza "Cementile" McClintic-Marshall Co., were the Engineers and Contractors on this installation.

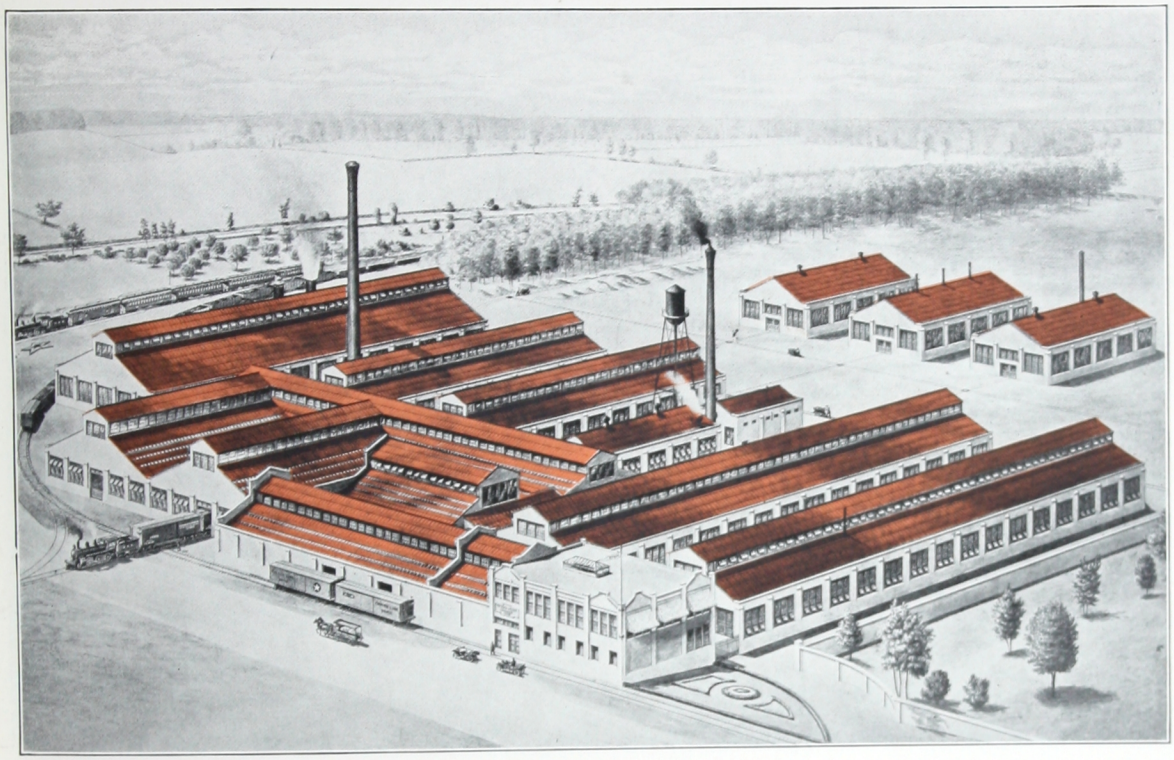


Plant of Hubbard & Company, Pittsburgh, Pa. Prack & Perrine, Engineers. Two Bonanza "Cementile" installations have been made for this company.

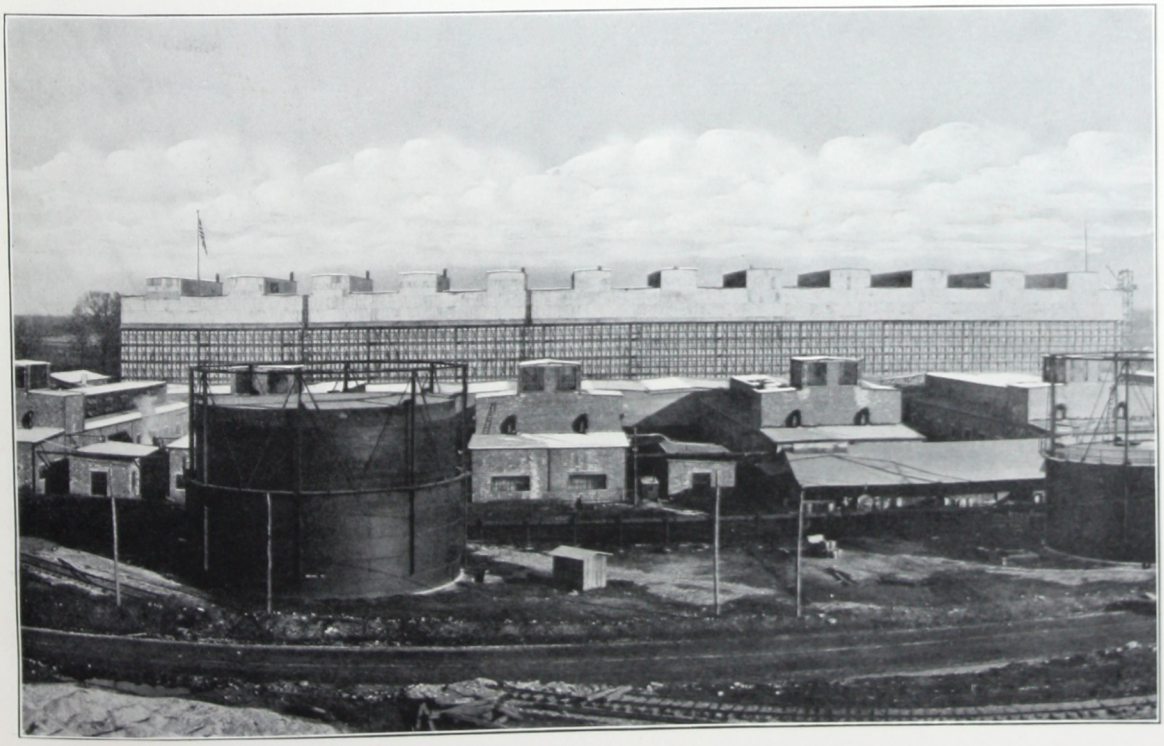


Buildings of the West Virginia Metal Products Co., Fairmont, W. Va. Jas. M. Boyle, Engineer; Fred T. Ley & Co., Contractors; Dreher, Churchman, Paul & Ford, Architects. Entire Plant Covered with Bonanza "Cementile"

Fifty-four U. S. Government buildings at Muscle Shoals, Ala., having a total area of more than 1,000,000 sq. ft. are covered with Bonanza Flat Tile. Westinghouse, Church, Kerr Co., were the Engineers and Contractors.



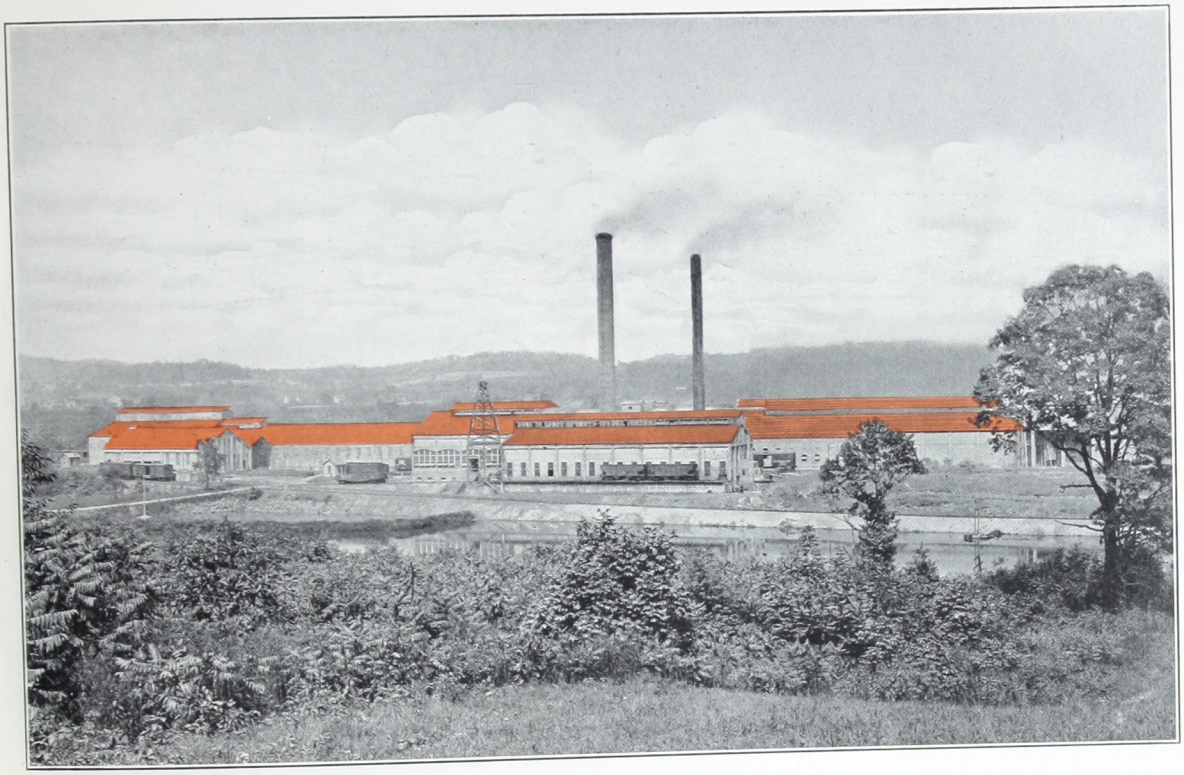
Plant of Nelson Valve Company, Philadelphia, Pa. Geo. K. Hooper, Engineer. Eleven Bonanza "Cementile" installations have been made for this company.



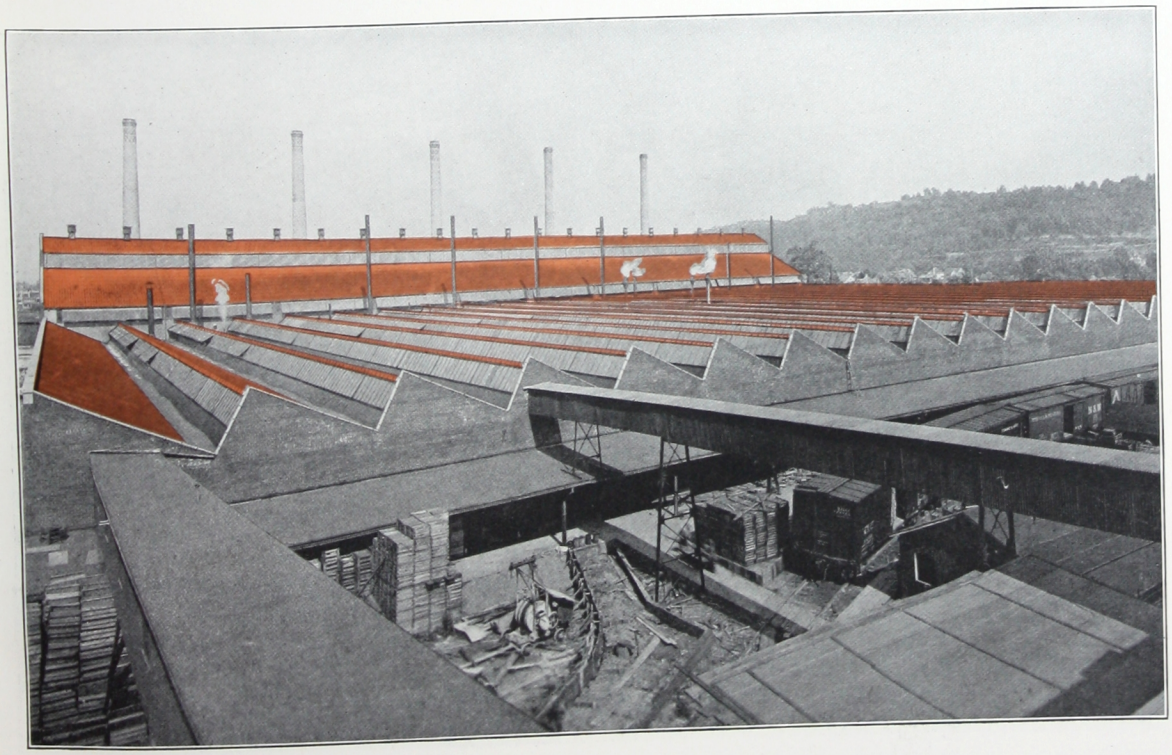
The work of erecting a special "Cementile" plant at Muscle Shoals, of manufacturing, and of laying the tile for these buildings (which are a part of those shown at the bottom of page 16) was completed within four months.

About 150,000 sq. ft. of Bonanza "Cementile" were used on these buildings of Union Switch & Signal Company, Swissvale, Pa. McClintic-Marshall Co., Engineers and Contractors.

Part of the seven installations, totalling approximately 87,000 sq. ft. of Bonanza "Cementile" made for Bridgeport Brass Co., Bridgeport, Conn.



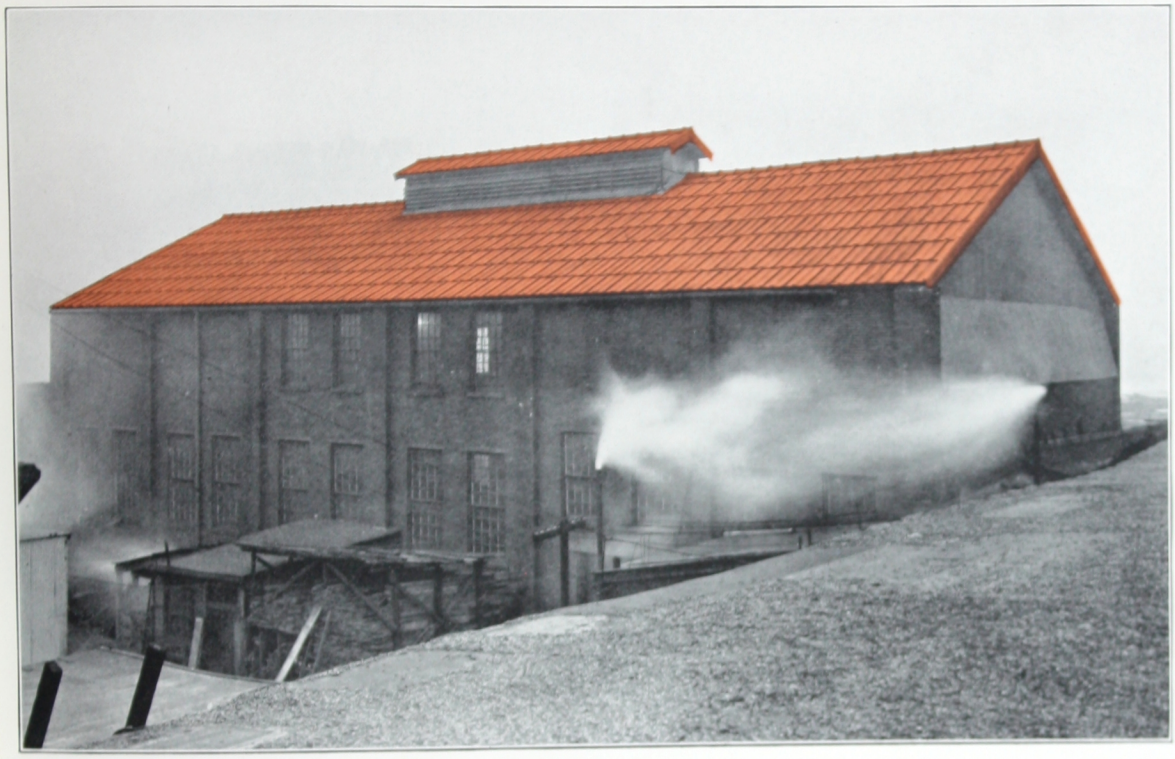
The Crescent Portland Cement Company, Wampum, Pa., have covered 20 buildings with approximately 205,000 sq. ft. of Bonanza "Cementile" Roofing.



Some of the buildings of the Boldt Glass Company, Huntington, W. Va. Six installations, requiring about 215,000 sq. ft. of Bonanza "Cementile," have been made for this company.

One of the four Bonanza "Cementile" installations made for Heller & Merz of Newark, N. J.

Plant of Mutual Potteries, Trenton, N. J. Stone & Webster Const. Co., Engineers and Contractors.



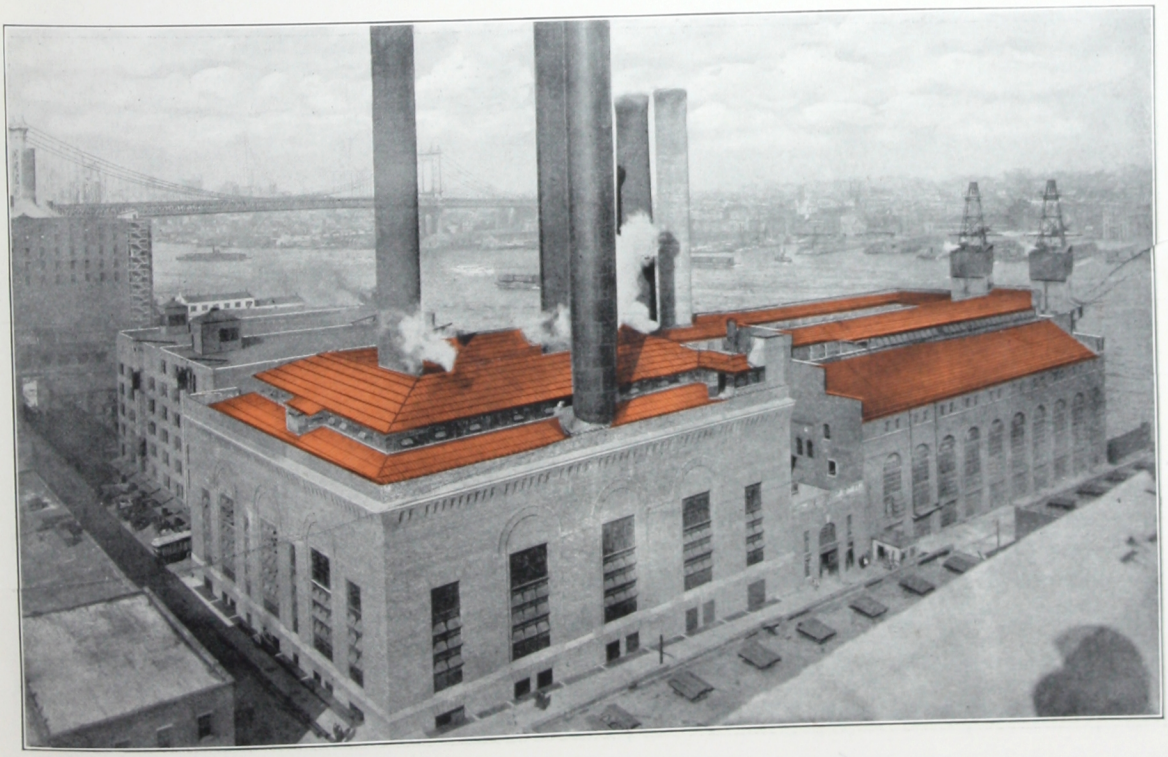
Bonanza "Cementile" Roof on the plant of Hall Steam Pump Co., Pittsburgh, Pa.

Bonanza Flat Tile Roofs of Fisher-Ohio Body Co., Cleveland, Ohio. Albert Kahn, Architect and Engineer; Thompson-Starrett Co., Contractors. Two installations have been made for this company.

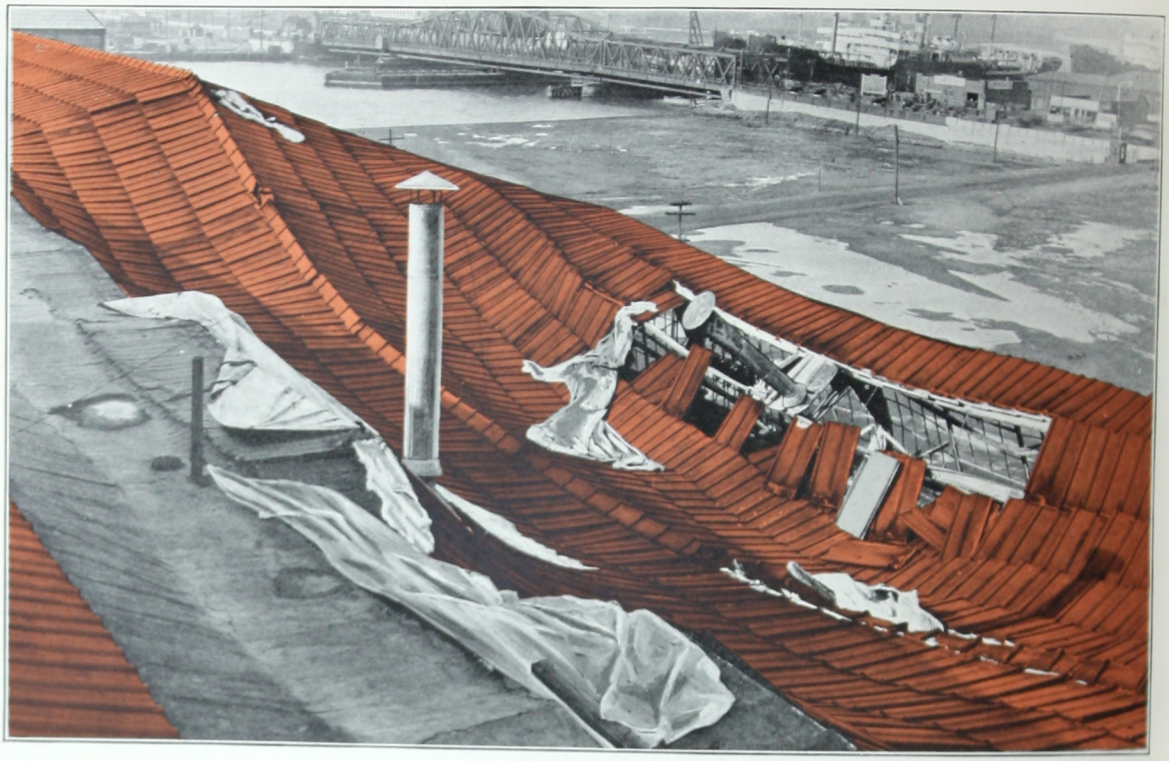
Detroit & Windsor Dancing Pavilion, Bois Blanc Island, Ontario, Canada. 50,000 sq. ft. of Bonanza "Cementile" were required. John Scott and Co., Architects.

Interior view of Detroit & Windsor Dancing Pavilion. Note the Bonanza Sky-light Tile in the roof.

Plant of the North Pole Ice Co., Pittsburgh, Pa. W. Griesser, Architect.



One of the five Bonanza "Cementile" installations made for the Edison Electric Illuminating Company, Brooklyn, N.Y.

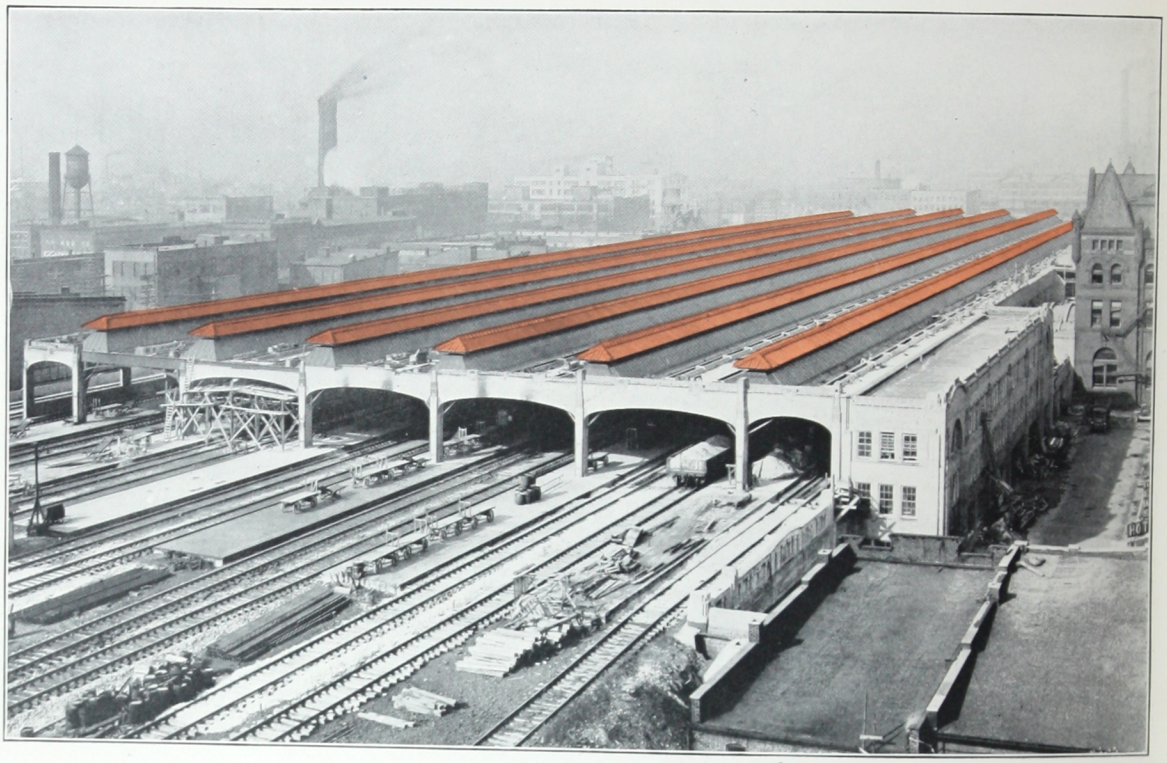


One day after the fire at the plant of the Ford Motor Co., Kearney, N. J. Albert Kahn, Architect and Engineer. Twelve installations, totalling about 705,000 sq. ft. of Bonanza "Cementile" have been made for this company.

This picture was taken eight days after the fire referred to above. More than 60% of the "Cementile" came through the fire unharmed and were used again in roofing the rebuilt structure.

Ford Motor Company building at Green Island. Albert Kahn, Architect and Engineer; Fred. T. Ley Co., Contractors.

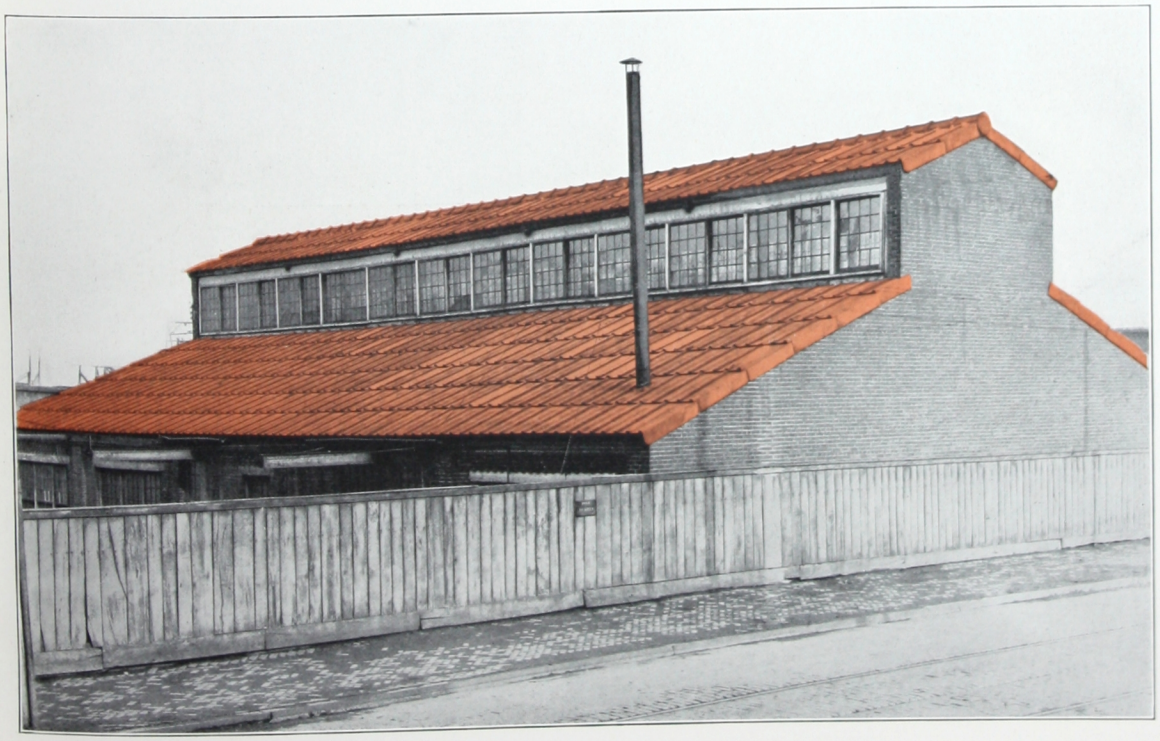
Plant of American Motors Export Co., at Jacksonville, Fla. Marsh & Saxelby, Architects.



One of the five Bonanza "Cementile" installations for Pennsylvania R. R., Lines West. Freight Terminal and Passenger Station at Indianapolis, Ind. Latham & Walters, Contractors.

W. B. & A. Ry. Terminal at Baltimore, Md. Geo. A. Fuller Co., Builders; Dreher, Churchman, Paul and Ford, Architects.

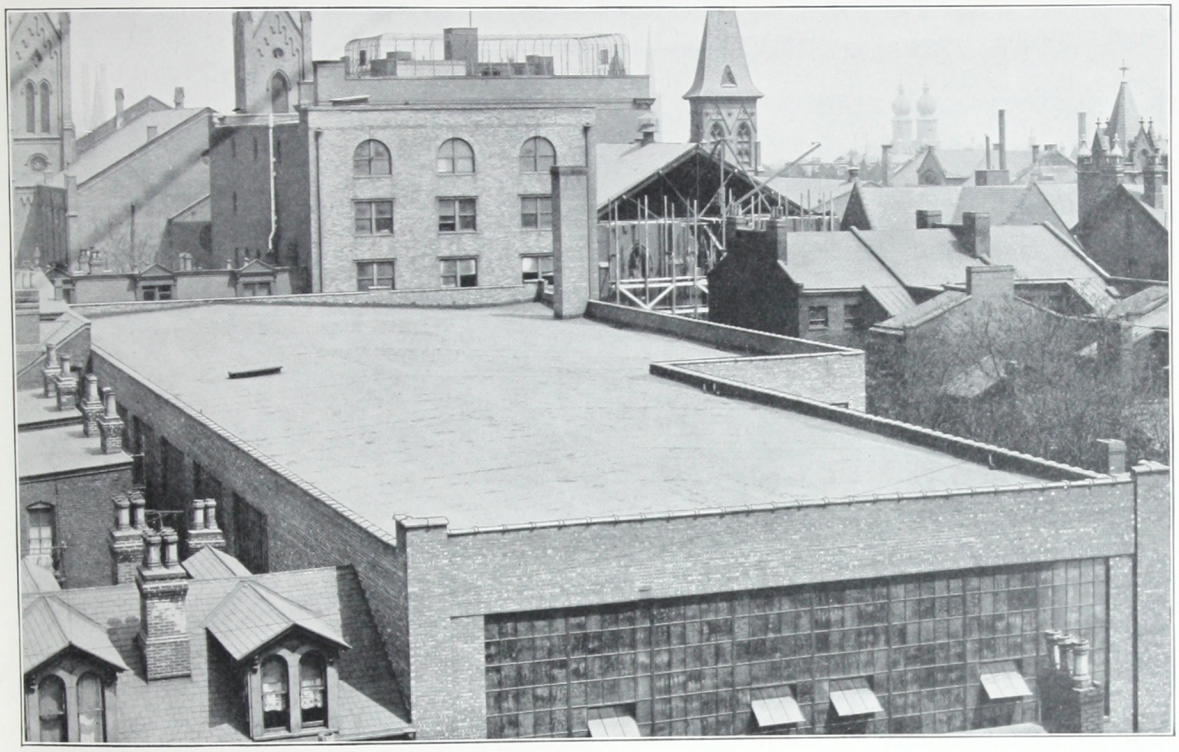
Car Repair Shop of Interborough Railroad, Brooklyn, N.Y. Rosenthal Engineering Contracting Company, Contractors; New York State Transit Commission, Engineers. A total of approximately 150,000 sq. ft. of Bonanza "Cementile" have been used by this company.



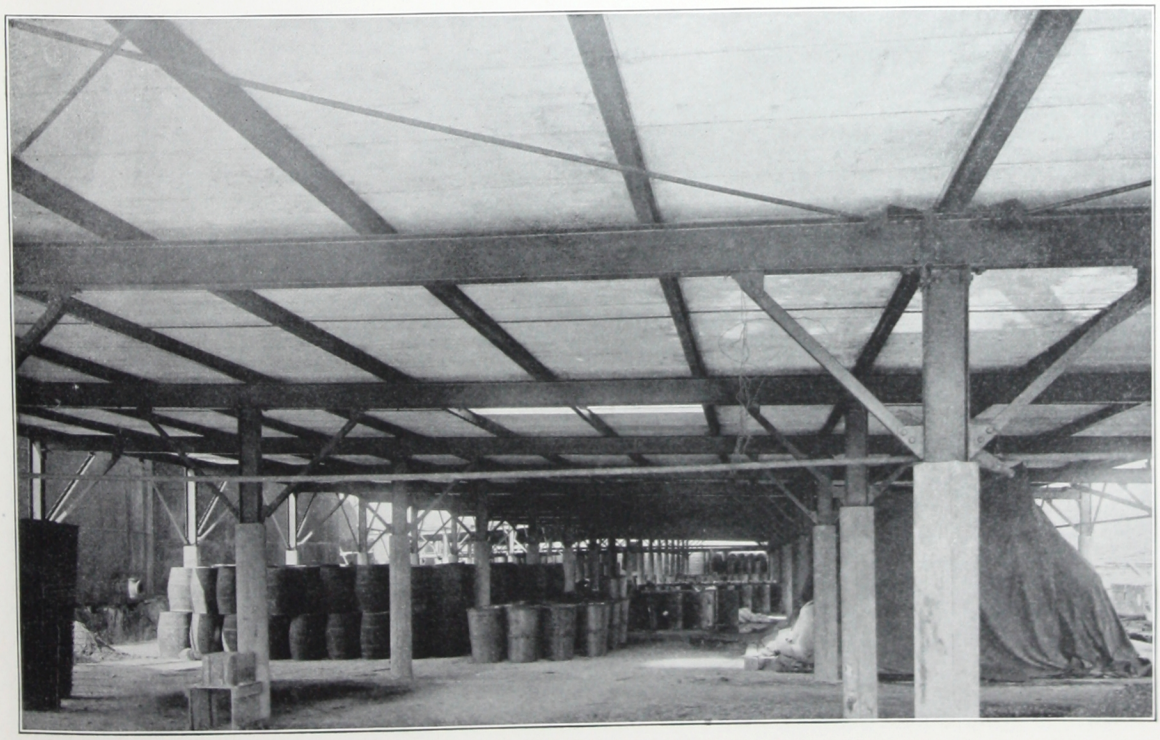
One of the two Bonanza "Cementile" installations made for Atlantic Refining Co., Pittsburgh, Pa.

Bonanza Skylight Tile on the garage of The Atlantic & Pacific Tea Company, Boston, Mass.

Garage of the Standard Oil Co. Newark, N. J. A total of eleven Bonanza "Cementile" installations have been made for this company.



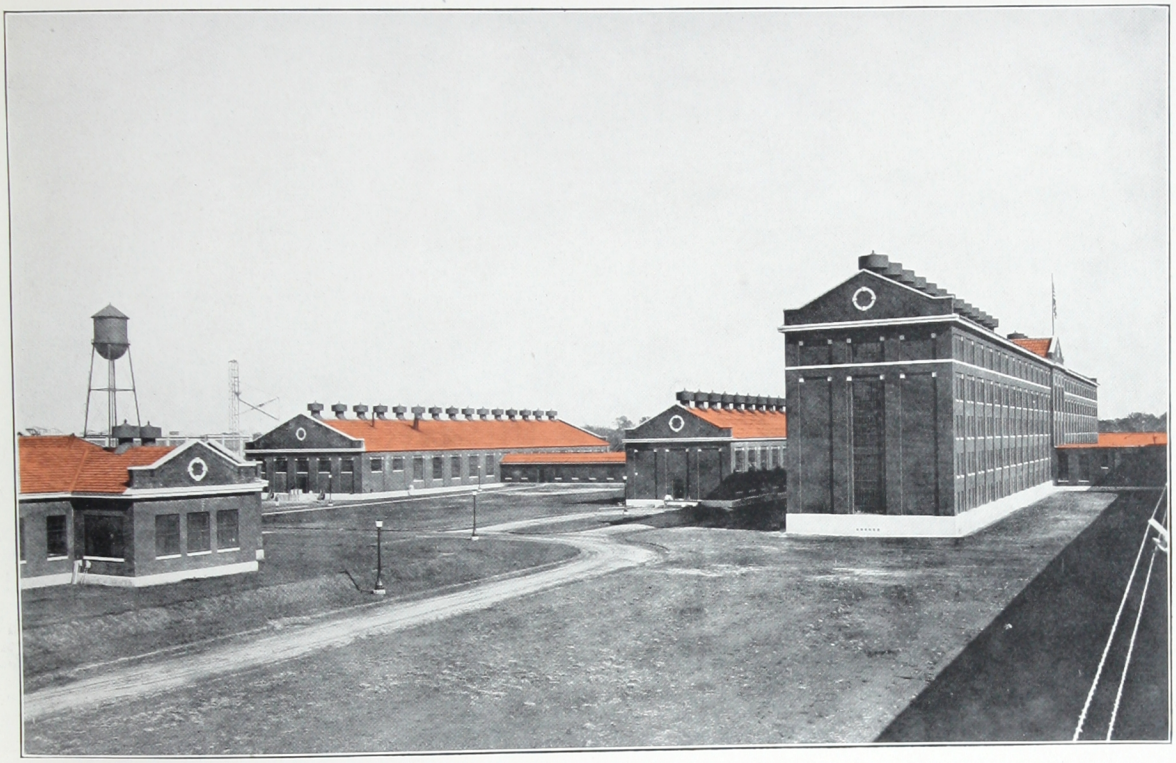
Bonanza Flat Tile Roof on the Donaldson Garage, Pittsburgh, Pa. Hunting & Davis, Engineers. Two installations have been made for this company.



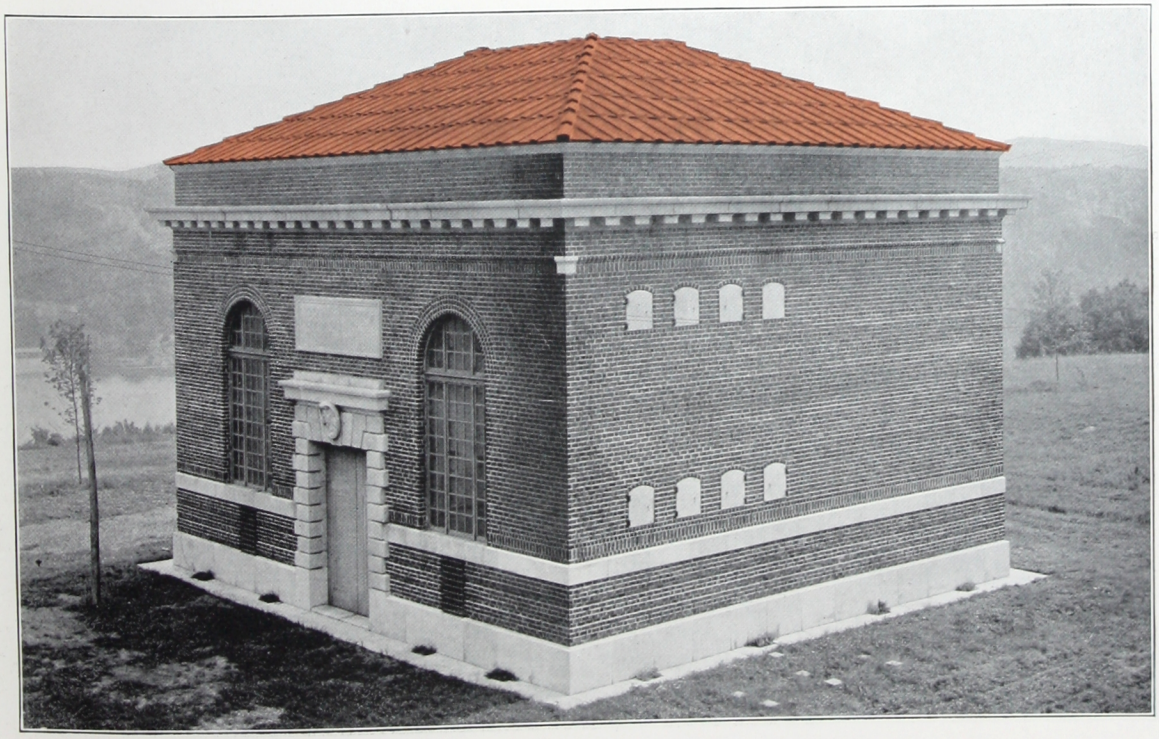
Showing the bottom side of Bonanza Flat Tile Roof. Warner-Quinlan Co., Warners, N.J.

National Theatre, Brooklyn, N.Y.

Marcus Loew's Brevoort Theatre, Brooklyn, N.Y.



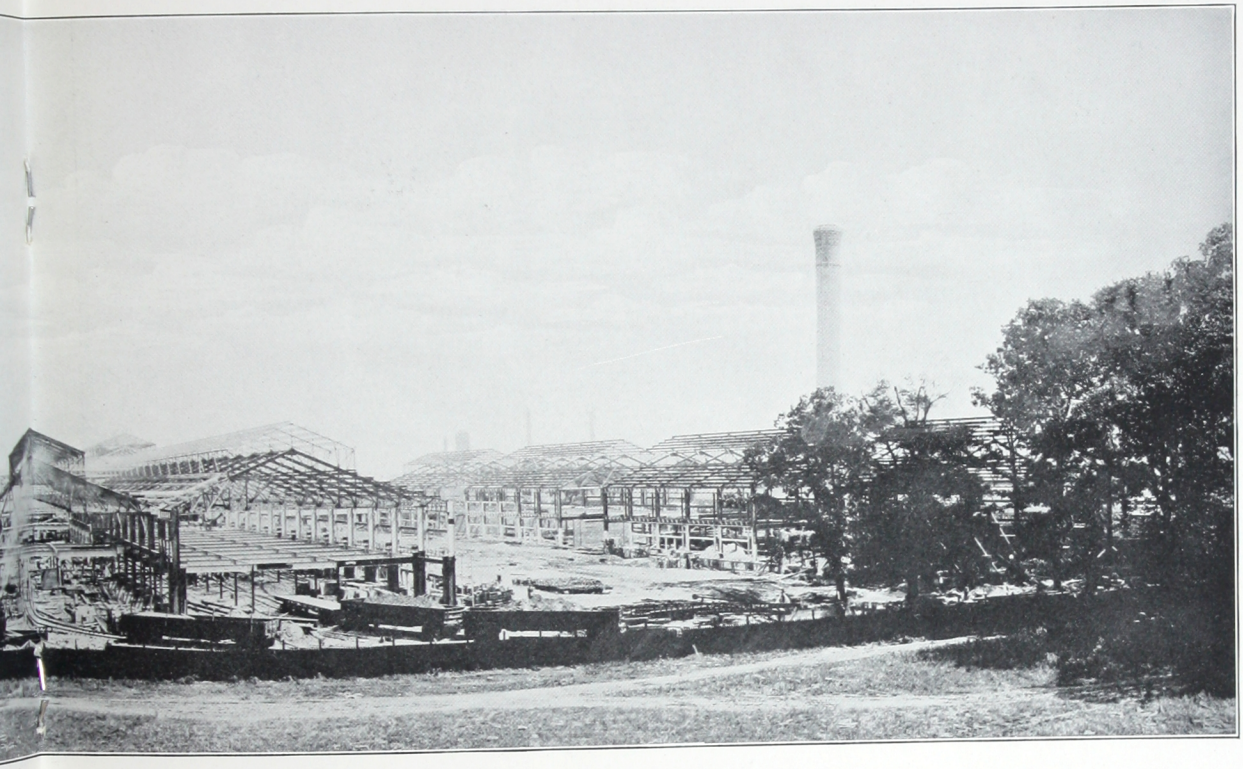
State Prison, Montgomery, Ala. M. J. Lide, Engineer. Six installations, totalling about 62,000 sq. ft. of Bonanza "Cementile" have been used here.



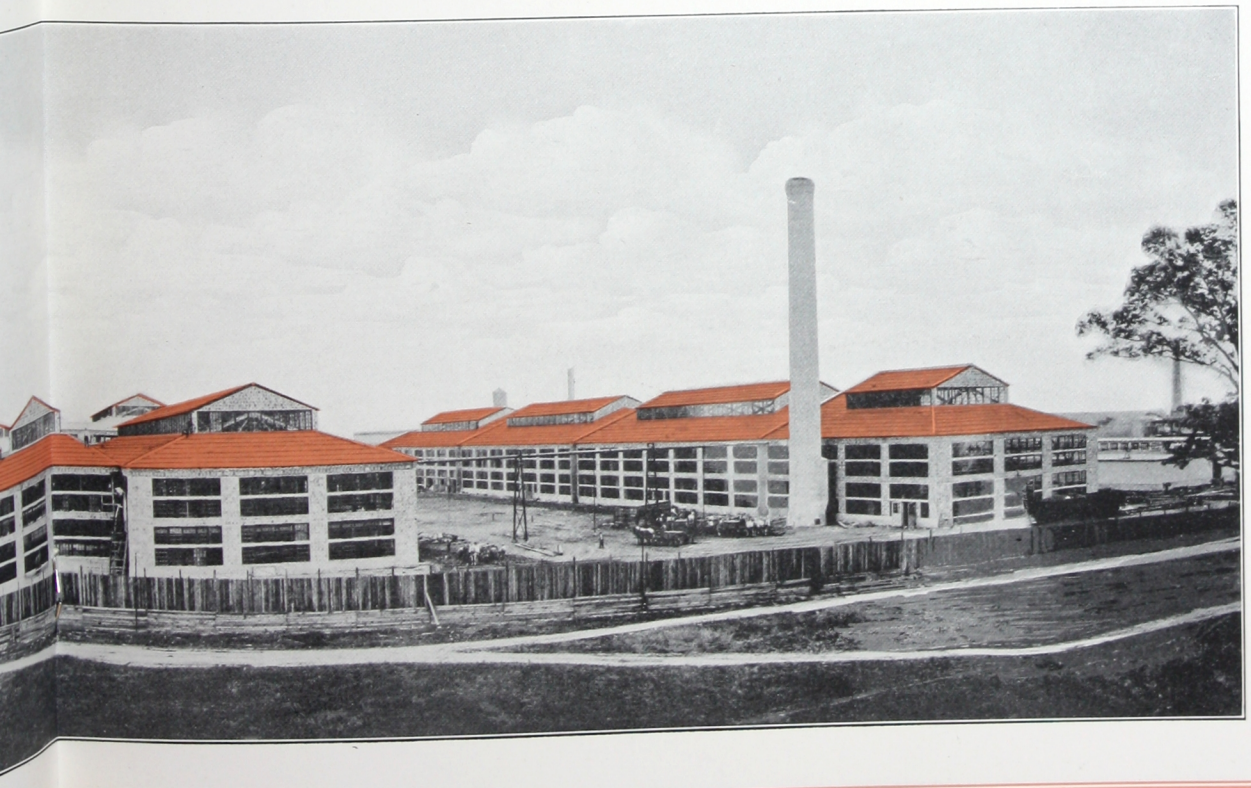
Bonanza "Cementile" of special design and color, used on fifty-seven buildings along the Catskill aqueduct, New York City Water Works, Catskill Water Supply. Waldo Smith, Chief Engineer; H. Lincoln Rogers, Architect.

Plant of Baldwin Locomotive Works, Eddystone, Pa. Built for Remington Arms. Co. About 274,000 sq. ft. of Bonanza "Cementile" were used.

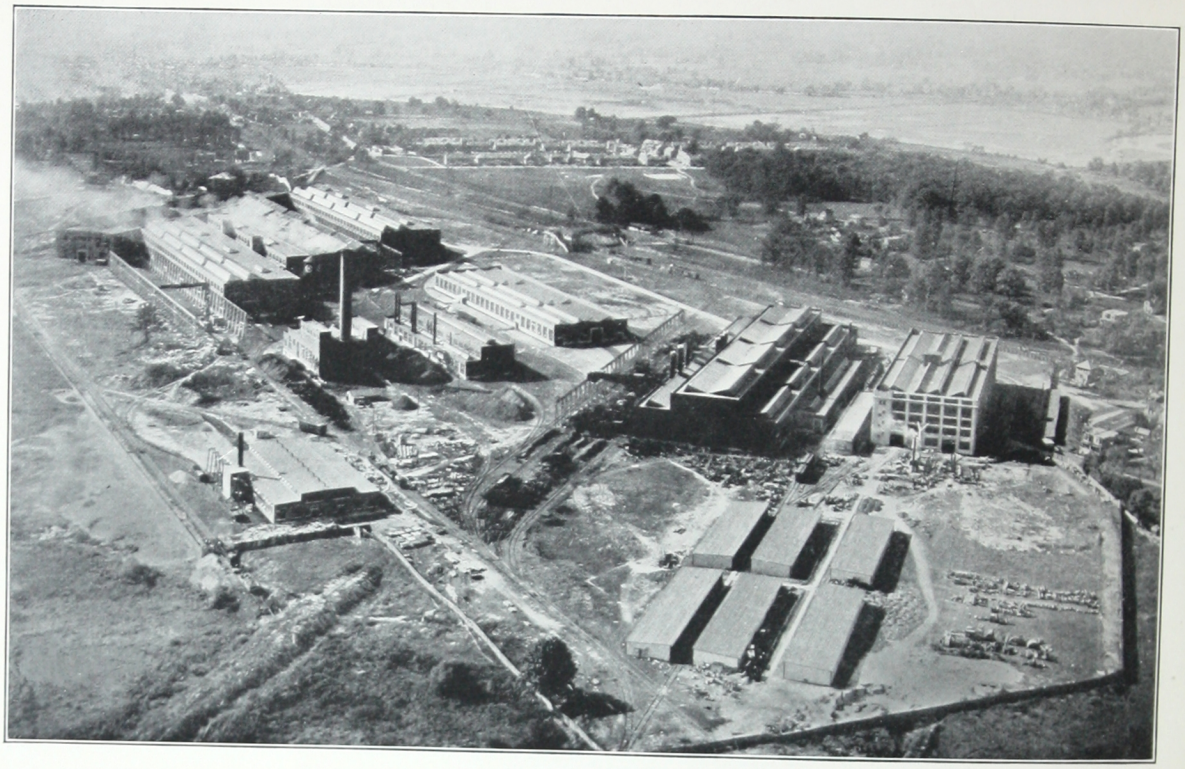
Plant of Baldwin Locomotive Works, Eddystone, Pa. Built for Remington Arms. Co. About 274,000 sq. ft. of Bonanza "Cementile" were used.



This photograph was taken on July 10th, 1915—three weeks after the first "Cementile" were laid.



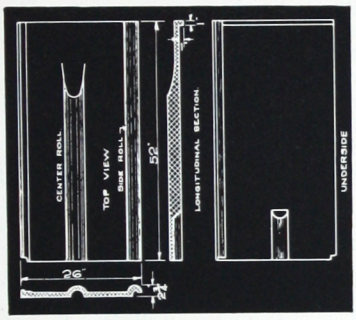
This photograph was taken on the day the work of roofing was completed; namely, October 10, 1915—exactly three months later than the above view.



Aeroplane view of the Westinghouse Electric and Manufacturing Company plant at Essington, Pa. Bonanza Flat "Cementile" was used on these roofs. This company has used more than 900,000 square feet of "Cementile"

Bonanza Interlocking "Cementile" Roof of Thomas Spacing Machine Co., Pittsburgh, Pa. Pittsburgh Bridge & Iron Works, Pittsburgh, Pa., Engineers and Contractors.

Data Sheets
Bonanza "Cementile" Roofing



Specifications for, and the application of Bonanza "Cementile," as well as suggestions for structural steel designing and detailing are given in the following pages. On page 64 will be found an index to the various designs illustrated.

Our Engineering Department will gladly submit additional details to meet conditions not shown, or furnish drawings showing complete purlin spacing for Bonanza "Cementile."

Bonanza Interlocking Tile

DATA

Dimensions

Designed for pitched construction, forming in itself a finished, non-combustible, watertight roof.

Thickness of tile . . . . . 1 inch
Size of standard tile . . . . . 26x52 inches
Weight per square foot . . . . . 14 pounds
Surface exposed to weather . . . . . 24x48 inches
Number of tile per square of roof (100 sq.ft.) . . 12½
Weight per square foot of finished roofing . . 16 pounds

Weights

Construction

Tile are made of best Portland Cement and clean sharp sand, and properly reinforced. The reinforcing metal is thoroughly embedded and protected. The exposed surface of the tile is Indian red in color, and the underside has a patented smooth white finish.

Load Tests

Bonanza Interlocking Tile are guaranteed to carry a uniformly distributed load of 250 pounds per square foot over a four-foot span. Actual tests show that tile at the age of two months carry as high as 350 pounds per square foot uniformly distributed load over a four-foot span before fracture.

The least desirable slope of roof is one-fifth pitch; by this is meant that the rise of roof is equal to one-fifth of the total span (4 13/16 in. per foot).

For spacing of purlins for 35 ft. to 75 ft. spans, refer to page 40.

In laying out spacing for spans not given, always start at the eaves. See Plates 6 to 13 (pages 45 to 49), which show various eave conditions. Note that the bearing surface for the eave tile must be raised 1 in. in order to give the eave tile the same slope as the rest of the roof. After determining the eave space, use standard spacing of 3 ft. 10 in. to 4 ft. 0-½ in., placing short course, if any, at the ridge. For Ridge course, see Plate 14, and table on page 41. In cases where Monitors are used, provide construction as shown on Plates 15 to 19.

The short courses at the ridge can be varied from 1 ft. 4 in. to 3 ft. 8 in.; see Plate 14.

To eliminate courses shorter than 1 ft. 4 in., use special 60 in. tile for eave course and adjacent course; see Plate 9.

Roof Design

The roof purlins should in all cases be channels or I-beams. The size recommended is given on Plate 5. For safe load on Channels and Beams see table on page 42.

All purlins must be straight and held in alignment by the use of sag rods. One line of sag rods is to be used for bays up to 16 ft. span. For longer spans two lines are used. See Plate 5. Where purlins are framed into trusses, they should be placed so that the top flanges will be not less than 1½ in. above the truss.

Where End Finishing Tile are used at the gables, the wall is slotted in line with the purlins to provide proper support for the tile; see Plate 27.

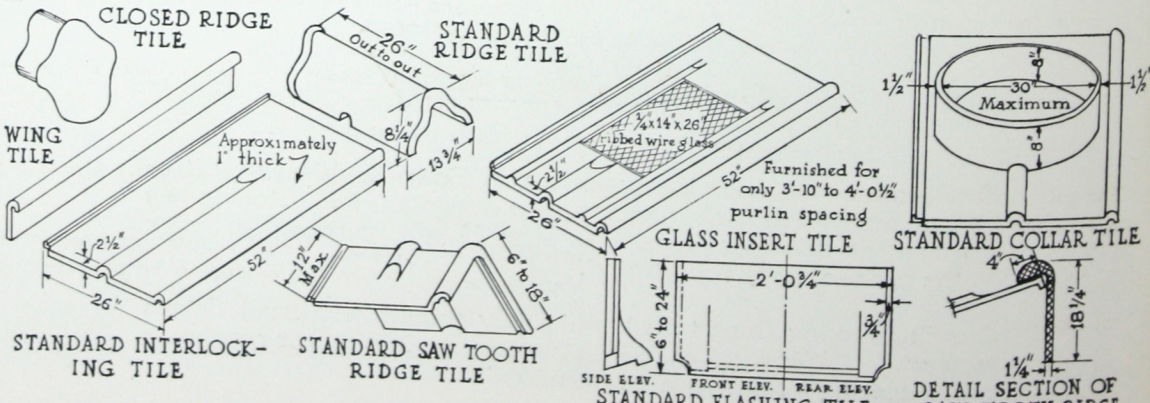
Where the gable walls extend above the roof line, flashing connection may be made with a chase at least 4"x4" filled with cement mortar—or omit chase and use cap and base metal flashing. See Plates 28 and 29 for additional flashing details.

In designing roof trusses, use total load of 45 pounds per square foot unless otherwise specified by building codes.

Glass Insert Tile

To provide light, we recommend the use of glass insert tile. These interlock with standard length tile and can be placed where desired. See Plate 2. For ventilating skylight tile, see Plate 33. For various trimming details, see Plates 30 to 38.

Isometric Views



Bonanza Interlocking Tile

SPECIFICATIONS

Dimensions

All roofs throughout, except where otherwise shown or noted, to be Reinforced Interlocking Cement Tile, Bonanza "Cementile" Brand as manufactured by the American Cement Tile Manufacturing Company of Pittsburgh, New York and Birmingham, Ala.; all tile to be furnished and erected by the Manufacturers.

The Standard Interlocking Tile to be 26"x52", 1" thick through the flat portion. The exposed weather surface to be 24"x48".

Material

Tile to be made from clean, sharp and comparatively coarse Sand and approved Portland Cement. Tile to be reinforced throughout with galvanized wire mesh placed approximately 3/8" from under surface, and thoroughly embedded and protected.

Tile Surfaces

The exposed surface of the tile to be finished in red color of best quality and the under side to be finished with patented white surface, these surfaces to be parts of the tile and not a wash or paint applied after the tile is made. The tile shall present a smooth top surface, free from holes or depressions.

Weight and Tests

Tile must not weigh over 16 lbs. per square foot and must be thoroughly seasoned to safely stand a uniformly distributed load of 250 lbs. per square foot when tested on supports 4 ft. apart; tests to be made from tile chosen at random from stock.

Application

The tile to be self fastening and held in place by a hanger at the upper end, and laid on purlins spaced as recommended by the Manufacturer. In addition, the tile to interlock at the side by means of a roll and rabbet, which are to be integral parts of the tile, and overlap not less than 4 in. on the tile below.

End Finish

The Gable ends of the building to be finished with End Finish Tile; namely, a wing 8 in. wide made of the same material as the Standard Interlocking Tile, which lay flat against the end walls of the building. On gable ends where walls extend above the roof level, a metal flashing, or 4"x4" chase at the line of the top purlins, to be provided for the reception of the tile.

Ridge

The ridge to be finished with an Interlocking Ridge Roll of the same material as the Standard Tile.

Hips

Where Hips are used, finish with Interlocking Hip Roll, of same material as Standard Tile, laid in Portland Cement, to fit tightly on main roof. Owners to provide a bearing flush with the tops of the purlins at the hips, to properly support the roof tile.

Glass

Glass Insert Tile to be furnished for lighting, and located as directed by the owner. Glass Insert Tile to be of similar construction as the Standard Interlocking Tile. The glass is to be either 20"x37" or 14"x25", 1/4 wire ribbed, imbedded in plastic cement so as to be replacable in case of breakage.

Gutters

The gutters to be formed with Standard Reinforced Flat Tile. Grading and Waterproofing to be provided by owners.

Flashing

Flashing Tile to be of the same material as the Standard Interlocking Tile. Proper support for same to be provided by owner, subject to the approval of the Manufacturers. All metal flashing to be provided by the owners.

Pointing

All tile when laid to be properly pointed with Lastik Cement at joints, and to be watertight and weather proof under general service conditions.

Bonanza Flat Tile

DATA

Dimensions

Designed for flat or pitched construction; made watertight by the application of some standard composition covering.

Weights

Thickness of tile	1½ inches
Size of standard tile	24x60 inches
Surface exposed	24x60 inches
Weight per square foot	16 pounds
Weight per square of roof	1600 pounds

Special tile are furnished for spans over or under 60 inches, and for flashing.

Construction

Tile are made of best Portland Cement and clean, sharp sand, and properly reinforced.

Load Tests

Bonanza Flat Tile are guaranteed to carry a uniformly distributed load of 200 pounds per square foot over a span of 5 ft.

Roof Design

Bonanza Flat Tile are laid on I-beam purlins spaced 5 ft. center to center; see Plates 38, 39 and 40. Special tile are furnished for spacings over and under 60 in., and for flashing. The size of purlins recommended is given on Plate 38. Channels of equivalent strength having a flange width of not less than 2½ in. may be used. After tile are laid the joints are properly pointed.

SPECIFICATIONS

All roofs throughout, except where otherwise shown or noted, to be Reinforced Flat Tile, Bonanza "Cementile" Brand as manufactured by the American Cement Tile Manufacturing Company of Pittsburgh, New York and Birmingham, Ala.; all tile to be furnished and erected by the Manufacturers.

Dimensions

The Standard Flat Tile to be 24 in. wide by 60 in. long and of a uniform thickness of 1½ in. throughout.

The tile to be laid on purlins having not less than 2½ in. flange width, spaced as recommended by the Manufacturers. Recesses to be provided at ends of all tile to hold them secure.

Material

Tile to be made from clean, sharp and comparatively coarse sand and approved Portland Cement. Tile to be properly reinforced, with the reinforcement placed approximately 3/8" from the underside, and thoroughly imbedded and protected.

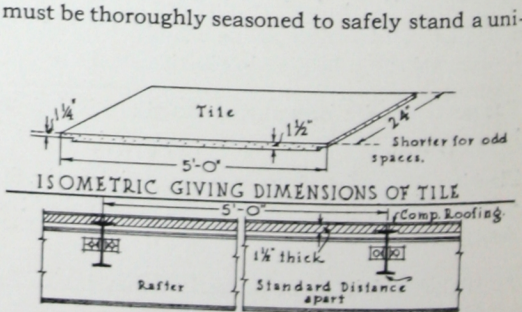
Weight and Tests

The tile must not weigh over 16 lbs. per square foot, and must be thoroughly seasoned to safely stand a uniformly distributed load of 200 lbs. per square foot when tested on supports 5 ft. apart; tests to be made from tile chosen at random from stock.

Pointing Waterproofing

All tile to be of uniform thickness so as to match evenly at the joints. Joints to be pointed with Lastik Cement so as to provide a smooth surface ready for the application of the composition roofing, which is to be applied with a high melting point adhesive. Where grading to downspouts is necessary, same is to be provided by the owners.

Isometric Views



ISOMETRIC GIVING DIMENSIONS OF TILE

SCALE ½"=1'-0"

SECTION SHOWING FLAT ROOF CONSTRUCTION

Bonanza Channel Tile

DATA

Dimensions

Designed for extra-wide-span flat or pitched construction, and for saw-tooth roofs; made watertight by the application of some standard composition covering.

Depth of tile	$3\frac{3}{4}$ inches
Thickness of tile	Flanges $1\frac{5}{8}$", Web 1 inch
Size of standard tile	18x96 inches
Surface exposed	18x96 inches
Weight per square foot	$20\frac{1}{2}$ pounds
Weight per square of roof	2050 pounds

Weights

Special tile are furnished for spans over or under 96".

Construction

Tile are made of best Portland Cement and clean, sharp sand, and properly reinforced.

Load Tests

Bonanza Channel Tile are guaranteed to carry a uniformly distributed load of 200 pounds per square foot over a span of 8 ft.

Roof Design

Bonanza Channel Tile are laid on I-beam purlins spaced 8 ft. center to center. See Plate 41. Special tile are furnished for spans over or under 96". After tile are laid, joints are properly pointed.

SPECIFICATIONS

All roofs throughout, except where otherwise shown or noted, to be Reinforced Channel Tile, Bonanza "Cementile" Brand as manufactured by the American Cement Tile Manufacturing Company of Pittsburgh, New York, and Birmingham, Ala.; all tile to be furnished and erected by the Manufacturers.

Dimensions

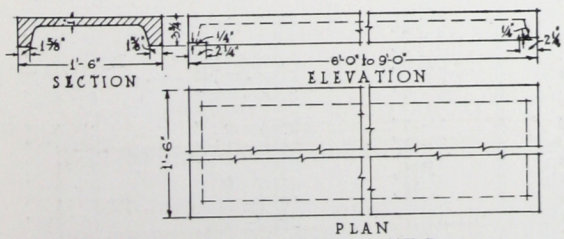
Standard Channel Tile to be 18 in. wide by 96 in. long with ribs at sides and ends of proper proportions. The web between the ribs to be not less than 1 in. in thickness. The tile to be laid on purlins spaced as recommended by the Manufacturers. Recesses to be provided at ends of all tile to hold them secure.

Material

Tile to be made from clean, sharp and comparatively coarse sand and approved Portland Cement. Tile to be properly reinforced with the reinforcement placed approximately $\frac{3}{8}$ in. from the underside, and thoroughly imbedded and protected.

Weight and Tests

The tile must not weigh over $20\frac{1}{2}$ lbs. per square foot, and must be thoroughly seasoned to safely stand a uniformly distributed load of 200 lbs. per square foot when tested on supports 8 ft. apart; tests to be made from tile chosen at random from stock.



3/4" SCALE DETAIL OF CHANNEL TILE.

Pointing Water-proofing

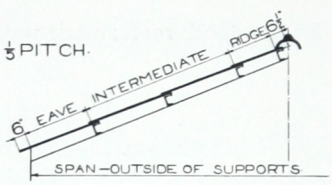
All tile to be of uniform thickness so as to match evenly at the joints. Joints to be pointed with Lastik Cement so as to provide a smooth surface ready for the application of the composition roofing, which is to be applied with a high melting point adhesive. Where grading to downspouts is necessary, same is to be provided by the owners.

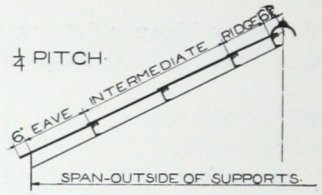
Isometric Views

Bonanza "Cementile" Roofing

PURLIN SPACING

For Spans 35 ft. to 75 ft.

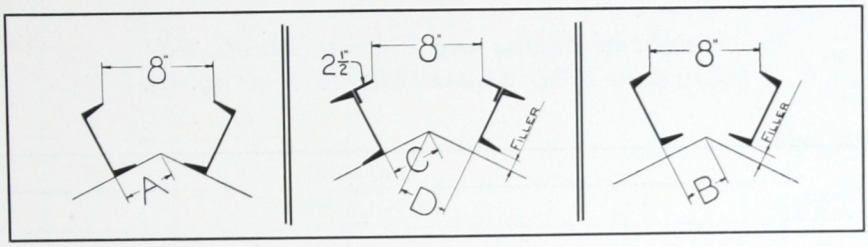




Span Feet	Eave	Intermediate	Ridge	Eave	Intermediate	Ridge
35	3′– 7″	3@4′– 0 1/4″	2′– 8 ″	3′– 7″	3@4′– 0 1/4″	3′– 4 3/8″
36	3′– 7″	3@3′–11 3/4″	3′– 4 ″	3′– 7″	3@4′– 0 ″	3′–11 7/8″
37	3′– 7″	3@3′–11 7/16″	3′–11 7/16″	4′– 3″	3@3′–11 3/4″	3′–11 3/8″
38	3′–11″	3@4′– 0 ″	4′– 0 ″	4′– 3″	1@4′– 8 1/4″	3@3′–11 ″
39	4′– 3″	1@4′– 4 1/8″	3@3′–11 1/2″	3′– 7″	4@4′– 0 ″	1′– 8 ″
40	4′– 3″	1@4′– 8 3/8″	3@4′– 0 1/4″	3′– 7″	4@3′–11 3/4″	2′– 3 3/4″
41	3′– 7″	4@4′– 0 ″	1′–11 1/2″	3′– 7″	4@4′– 0 1/4″	2′– 8 1/2″
42	3′– 7″	4@3′–11 1/2″	2′– 8 ″	3′– 7″	4@4′– 0 ″	3′– 4 1/8″
43	3′– 7″	4@4′– 0 ″	3′– 0 1/2″	3′– 7″	4@3′–11 3/4″	3′–11 7/8″
44	3′– 7″	4@3′–11 ″	3′–11 ″	4′– 3″	4@3′–11 1/2″	3′–11 5/8″
45	3′– 7″	4@4′– 0 1/4″	4′– 0 1/4″	4′– 3″	1@4′– 4 1/4″	4@4′– 0 ″
46	4′– 3″	4@4′– 0 ″	4′– 0 ″	3′– 7″	5@3′–11 7/8″	1′– 7 5/8″
47	4′– 3″	1@4′– 4 3/8″	4@4′– 0 1/2″	3′– 7″	5@3′–11 1/2″	2′– 4 1/4″
48	3′– 7″	5@4′– 0 1/8″	1′– 8 1/8″	3′– 7″	5@4′– 0 1/16″	2′– 8 1/16″
49	3′– 7″	5@4′– 0 ″	2′– 3 1/4″	3′– 7″	5@3′–11 7/8″	3′– 3 3/4″
50	3′– 7″	5@4′– 0 1/4″	2′– 8 1/2″	3′– 7″	5@3′–11 5/8″	3′–11 3/4″
51	3′– 7″	5@4′– 0 ″	3′– 4 1/4″	3′–11″	5@4′– 0 1/8″	4′– 0 1/4″
52	3′– 7″	5@3′–11 3/4″	3′–11 7/8″	4′– 3″	1@4′– 4 ″	5@3′–11 7/8″
53	3′–11″	5@4′– 0 3/16″	4′– 0 3/16″	3′– 7″	6@3′–11 3/4″	1′– 7 1/2″
54	4′– 3″	1@4′– 3 5/8″	5@4′– 0 ″	3′– 7″	6@4′– 0 1/16″	2′– 0 1/4″
55	3′– 7″	6@3′–11 11/16″	1′– 8 ″	3′– 7″	6@4′– 0 ″	2′– 7 3/8″
56	3′– 7″	6@4′– 0 ″	2′– 0 1/2″	3′– 7″	6@3′–11 3/4″	3′– 3 5/8″
57	3′– 7″	6@3′–11 7/8″	2′– 7 3/4″	3′– 7″	6@4′– 0 1/8″	3′– 8 ″
58	3′– 7″	6@4′– 0 1/4″	3′– 0 ″	3′–11″	6@3′–11 15/16″	3′–11 15/16″
59	3′– 7″	6@4′– 0 ″	3′– 8 ″	4′– 3″	6@4′ –0 5/16″	4′– 0 5/16″
60	3′–11″	6@3′–11 3/4″	3′–11 7/8″	3′– 7″	7@3′–11 11/16″	1′– 7 1/16″
61	4′– 3″	6@4′– 0 1/8″	4′– 0 1/8″	3′– 7″	7@4′– 0 ″	1′–11 5/8″
62	4′– 3″	1@4′– 8 ″	6@3′–11 7/8″	3′– 7″	7@3′–11 3/4″	2′– 8 ″
63	3′– 7″	7@3′–11 3/4″	1′–11 1/2″	3′– 7″	7@4′– 0 1/8″	3′– 0 1/8″
64	3′– 7″	7@4′– 0 ″	2′– 4 1/4″	3′– 7″	7@4′– 0 ″	3′– 7 1/4″
65	3′– 7″	7@3′–11 7/8″	2′–11 5/8″	3′– 7″	7@4′– 0 5/16″	4′– 0 3/16″
66	3′– 7″	7@4′– 0 3/16″	3′– 4 ″	4′– 3″	7@4′– 0 1/8″	4′– 0 1/4″
67	3′– 7″	7@4′– 0 ″	3′–11 5/8″	4′– 3″	1@4′– 7 1/8″	7@4′– 0 ″
68	4′– 3″	7@3′–11 3/4″	3′–11 7/8″	3′– 7″	8@3′–11 7/8″	1′–11 5/8″
69	4′– 3″	1@4′– 4 1/8″	7@4′– 0 1/16″	3′– 7″	8@4′– 0 1/8″	2′– 4 1/4″
70	3′– 7″	8@3′–11 7/8″	1′– 8 ″	3′– 7″	8@4′– 0 ″	3′– 0 ″
71	3′– 7″	8@4′– 0 3/16″	2′– 0 ″	3′– 7″	8@3′–11 7/8″	3′– 7 5/8″
72	3′– 7″	8@4′– 0 ″	2′– 8 ″	3′– 7″	8@4′– 0 3/16″	3′–11 7/8″
73	3′– 7″	8@3′–11 7/8″	3′– 3 1/2″	4′– 3″	8@4′– 0 ″	4′– 0 1/8″
74	3′– 7″	8@4′– 0 1/8″	3′– 8 ″	4′– 3″	1@4′– 7 1/8″	8@3′–11 7/8″
75	3′–11″	8@4′– 0 ″	3′–11 3/8″	3′– 7″	9@4′– 0 1/8″	1′– 8 3/8″

Bonanza "Cementile" Roofing

RIDGE PURLINS



FIGURES BELOW HEAVY LINES ARE FOR C. & D.

	C	A	Flange Width	Distance B with Fillers		
				¼"	½"	¾"
1/6 Pitch 4" in 12"	5	4 1/4	1.75	4 3/16	4 1/8	4
	6	4 1/8	1.92	4 1/16	3 15/16	3 7/8
	7	3 15/16	2.09	3 7/8	3 3/4	3 11/16
	8	3 3/4	2.26	3 11/16	3 5/8	3 1/2
	9	3 5/8	2.43	3 9/16	3 7/16	3 3/8
	10	3 7/16	2.60	3 3/8	3 1/4	3 3/16
1/5 Pitch 4 13/16" in 12"	5	4 1/16	1.75	3 15/16	3 7/8	3 3/4
	6	3 15/16	1.92	3 3/4	3 5/8	3 1/2
	7	3 9/16	2.09	3 1/2	3 3/8	3 5/16
	8	3 3/8	2.26	3 1/4	3 1/8	3 1/16
	9	3 1/8	2.43	3 1/16	2 15/16	2 13/16
	10	2 7/8	2.60	2 13/16	2 11/16	2 1/2
1/4.8 Pitch 5" in 12"	5	4	1.75	3 7/8	3 3/4	3 11/16
	6	3 3/4	1.92	3 5/8	3 9/16	3 7/16
	7	3 1/2	2.09	3 3/8	3 1/4	3 1/8
	8	3 3/16	2.26	3 1/8	3	2 7/8
	9	3	2.43	2 7/8	2 3/4	2 11/16
	10	2 5/8	2.60	2 1/2	2 7/16	2 5/16
1/4 Pitch 6" in 12"	5	3 11/16	1.75	3 9/16	3 7/16	3 5/16
	6	3 3/8	1.92	3 1/4	3 1/8	3
	7	3	2.09	2 7/8	2 3/4	2 5/8
	8	2 11/16	2.26	2 9/16	2 7/16	2 7/16
	9	7/16	2.43	2 5/16	2 3/16	2
	10	1 15/16	2.60	1 13/16	1 11/16	1 1/2
1/3 Pitch 8" in 12"	5	3 3/16	1.75	3 1/16	2 7/8	2 11/16
	6	2 3/4	1.92	2 9/16	2 3/8	2 3/16
	7	2 3/16	2.09	2 1/16	2 1/4	2 1/8
	8	1 15/16	2.26	1 3/4	1 5/8	1 7/16
	9	1 1/4	2.43	1 1/8	1/16	3/4
	10	5/8	2.60	7/16	1/4	1/16

1/6 Pitch

1/5 Pitch

1/4 .8 Pitch

1/4 Pitch

1/3 Pitch

Fillers

Safe Loads in Tons Uniformly Distributed

Weight of Beams and Channels Included
Maximum Fiber Stress 16000 lbs. per sq. in.

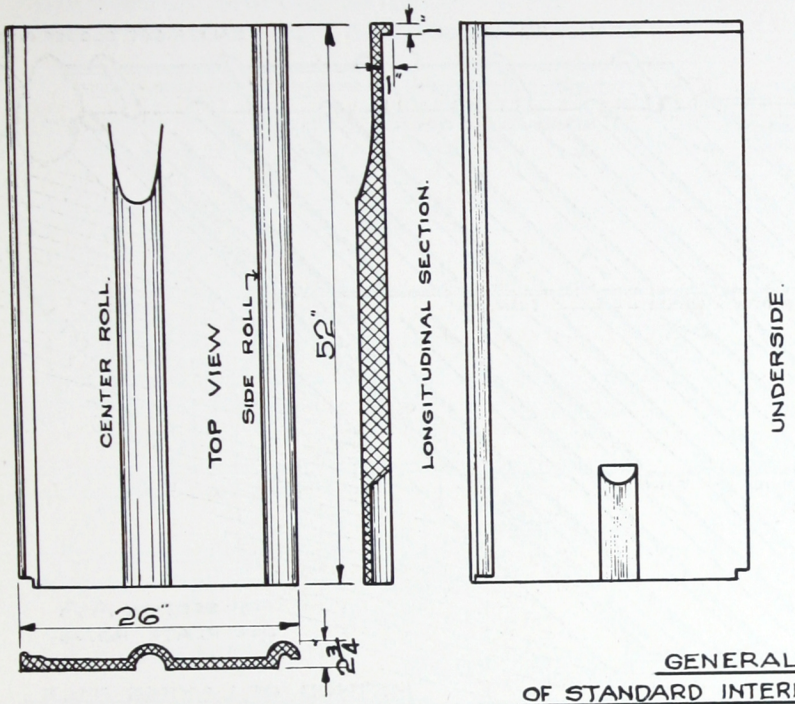
I-Beams

Size	Weight, Pounds	Flange, Width	I-BEAMS SPAN IN FEET											
			14	15	16	17	18	19	20	21	22	23	24	25
5″	9.75	3 ″	1.84	1.72	1.61	1.52	1.43	1.36	1.29	1.32				
6″	12.25	3⅜″	2.77	2.58	2.42	2.28	2.15	2.04	1.94	1.85				
7″	15.00	3⅝″	3.94	3.68	3.45	3.25	3.07	2.91	2.76	2.63				
8″	18.00	4 ″	5.42	5.06	4.74	4.46	4.21	3.99	3.79	3.61	3.45	3.30	3.16	3.04
9″	21.00	4⅜″	7.19	6.71	6.29	5.92	5.59	5.30	5.03	4.79	4.58	4.38	4.19	4.03
10″	25.00	4⅝″	9.30	8.68	8.14	7.66	7.24	6.86	6.51	6.20	5.92	5.66	5.43	5.21
12″	31.50	5 ″	13.70	12.80	12.00	11.03	10.70	10.10	9.59	9.14	8.72	8.34	7.99	7.67

Channels

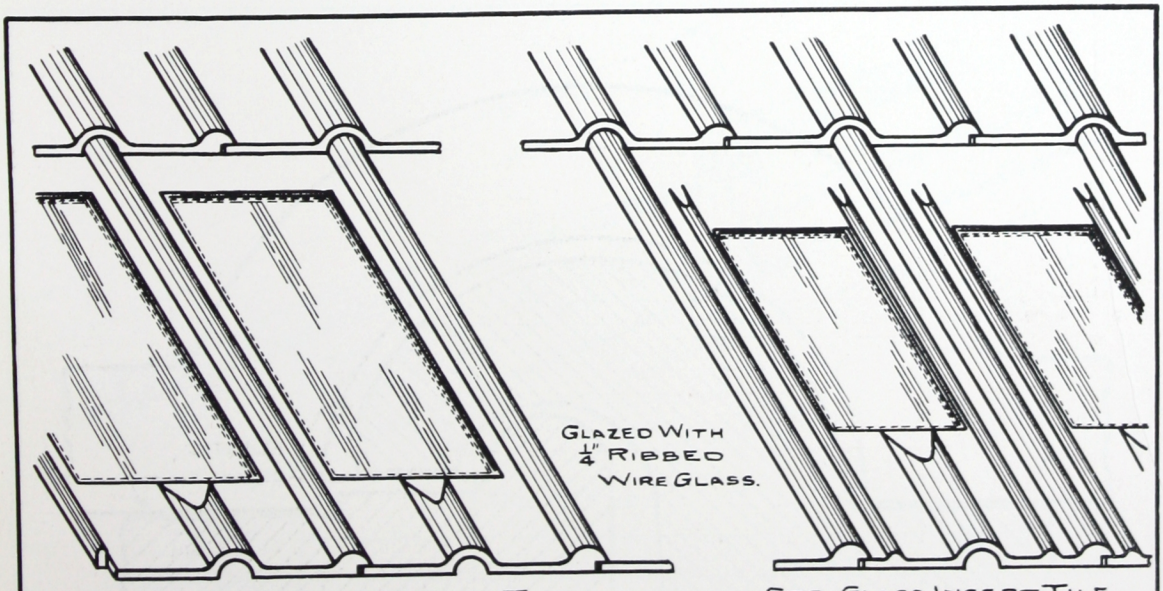
			CHANNELS											
5″	6.50	1¾″	1.13	1.05	.99	.93	.88	.83	.79					
6″	8.00	2 ″	1.65	1.54	1.44	1.36	1.28	1.22	1.16					
7″	9.75	2⅛″	2.39	2.23	2.09	1.96	1.86	1.76	1.67	1.59	1.52	1.45	1.39	1.34
8″	11.25	2¼″	3.08	2.87	2.69	2.53	2.39	2.27	2.15	2.05	1.96	1.87	1.79	1.72
9″	13.25	2½″	4.01	3.74	3.51	3.30	3.12	2.95	2.81	2.67	2.55	2.44	2.34	2.24
10″	15.00	2⅝″	5.10	4.76	4.46	4.20	3.96	3.76	3.57	3.40	3.24	3.10	2.97	2.85
12″	20.50	3 ″	8.14	7.59	7.12	6.70	6.33	5.99	5.70	5.42	5.18	4.95	4.55	4.56

Plate 1



GENERAL DIMENSIONS
OF STANDARD INTERLOCKING TILE AND RIDGE.

Plate 2



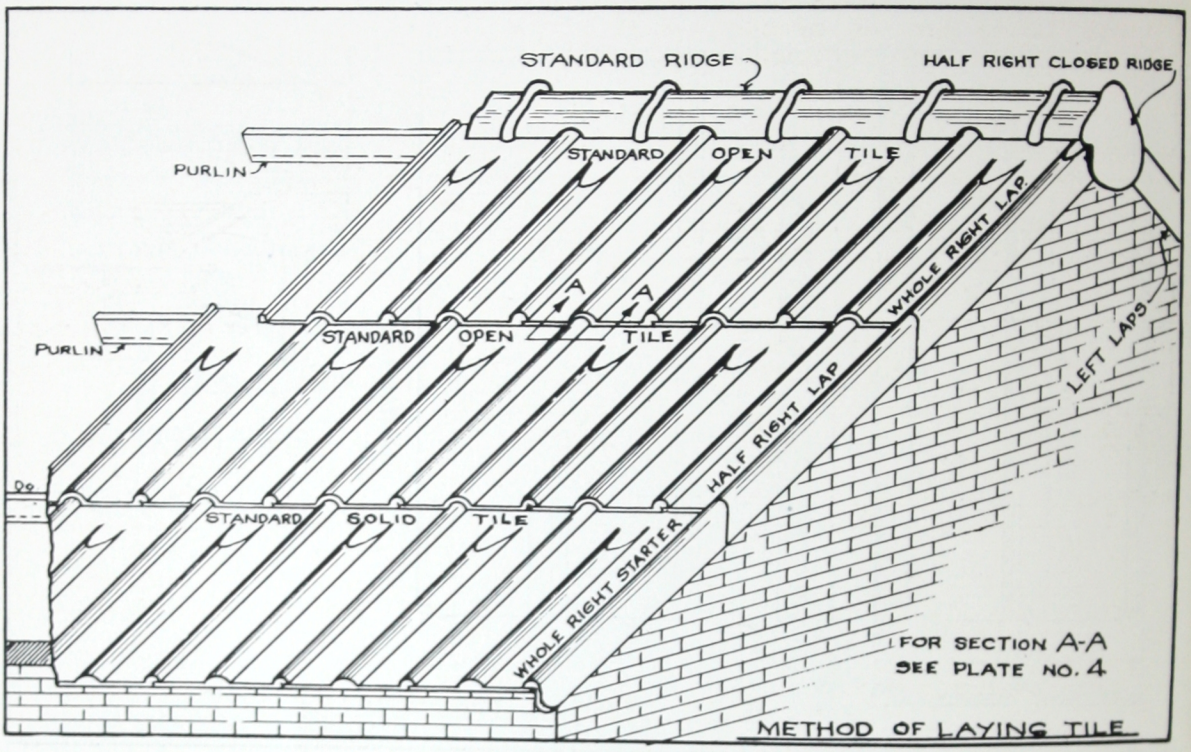
LARGE GLASS INSERT TILE
SIZE OF GLASS 20"×37"

STD. GLASS INSERT TILE
SIZE OF GLASS 14"×26"

THESE TILE FURNISHED ONLY IN STD. LENGTH, - PURLIN SPACING 3'-10" TO 4'-0½".

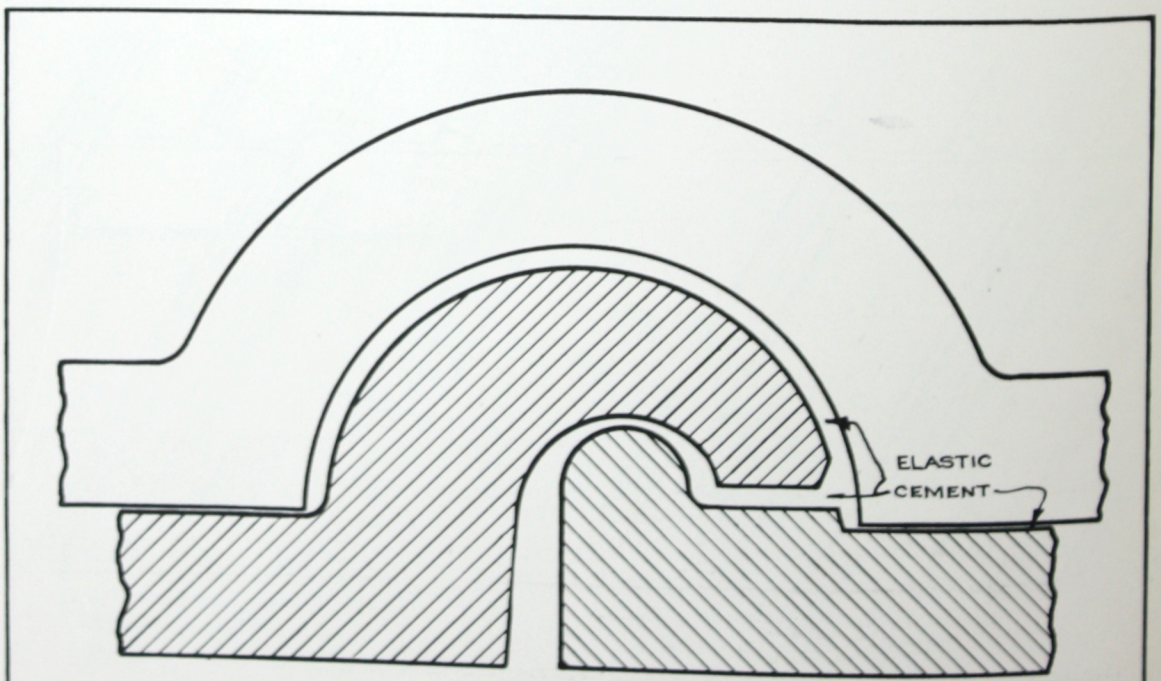
GLASS INSERT TILE FOR SKYLIGHT EFFECTS

Plate 3



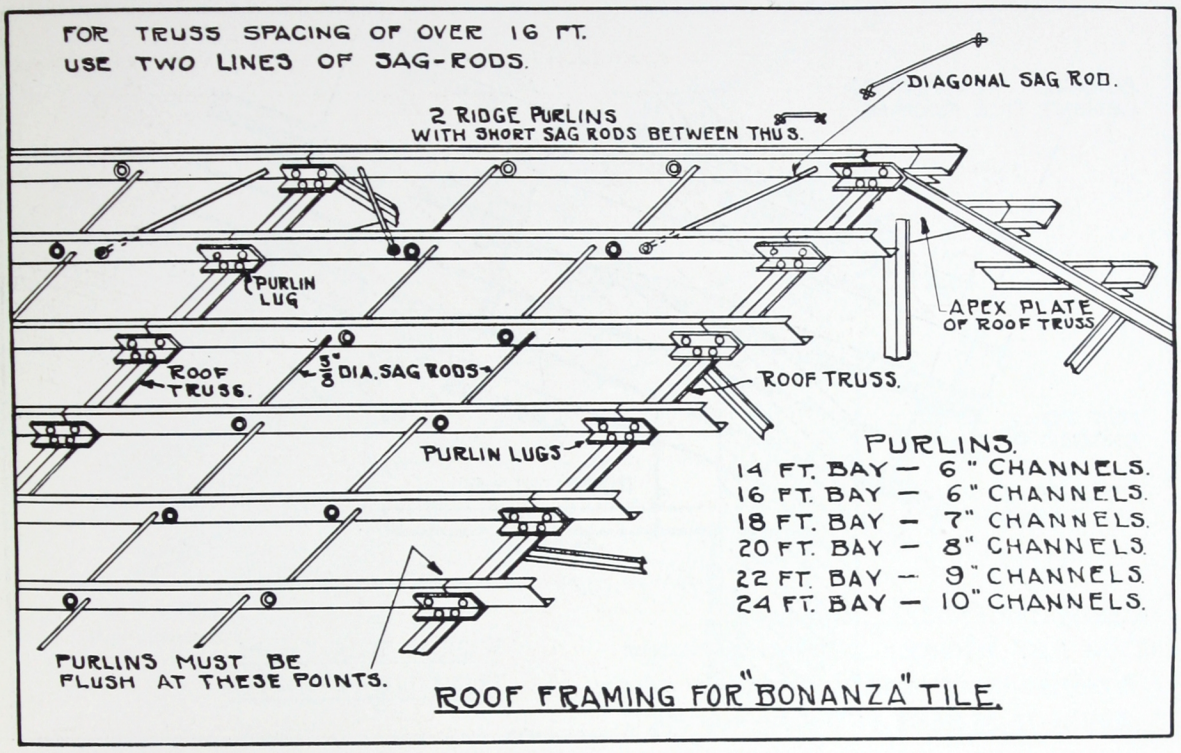
METHOD OF LAYING TILE.

Plate 4



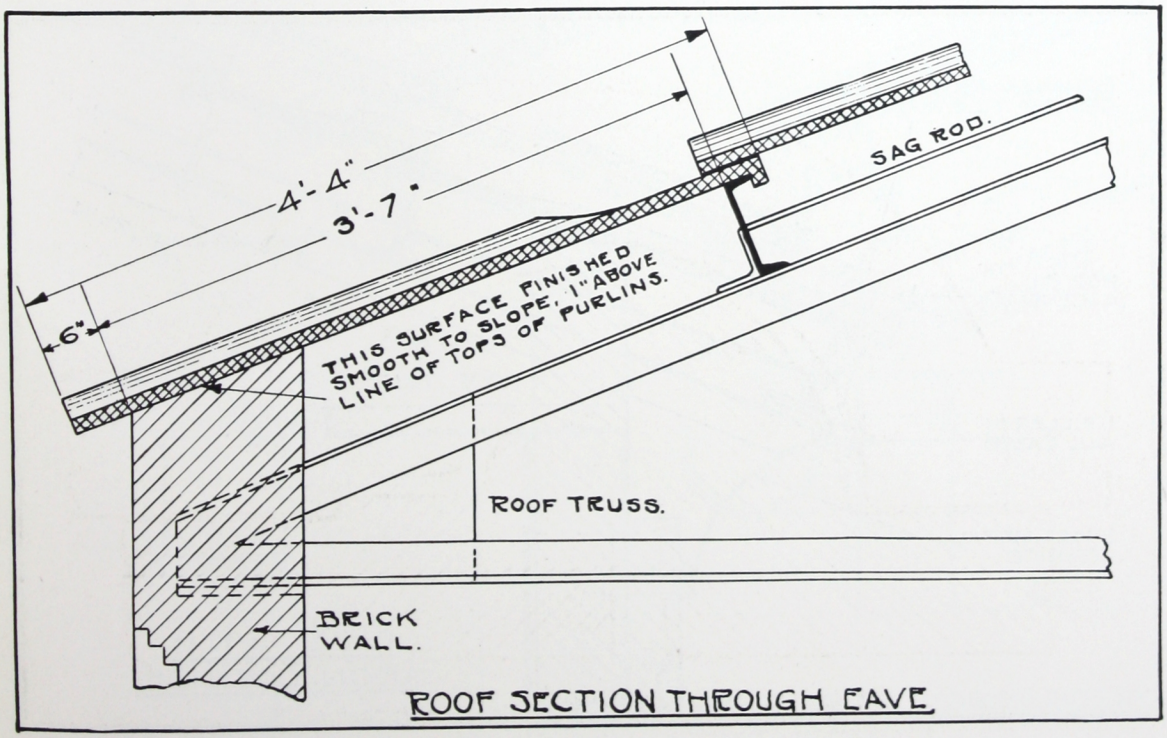
SECTION "AA" THRU SIDE ROLL.

Plate 5



ROOF FRAMING FOR "BONANZA" TILE.

Plate 6



ROOF SECTION THROUGH EAVE

Plate 7

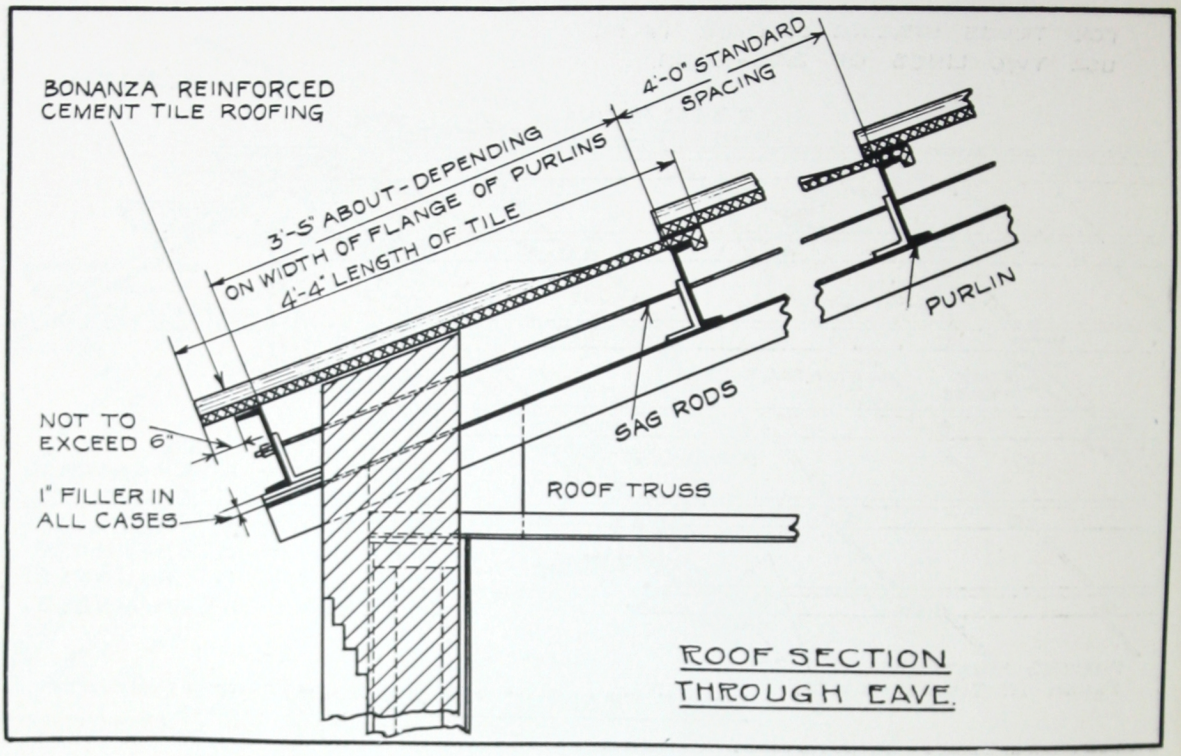


Plate 8

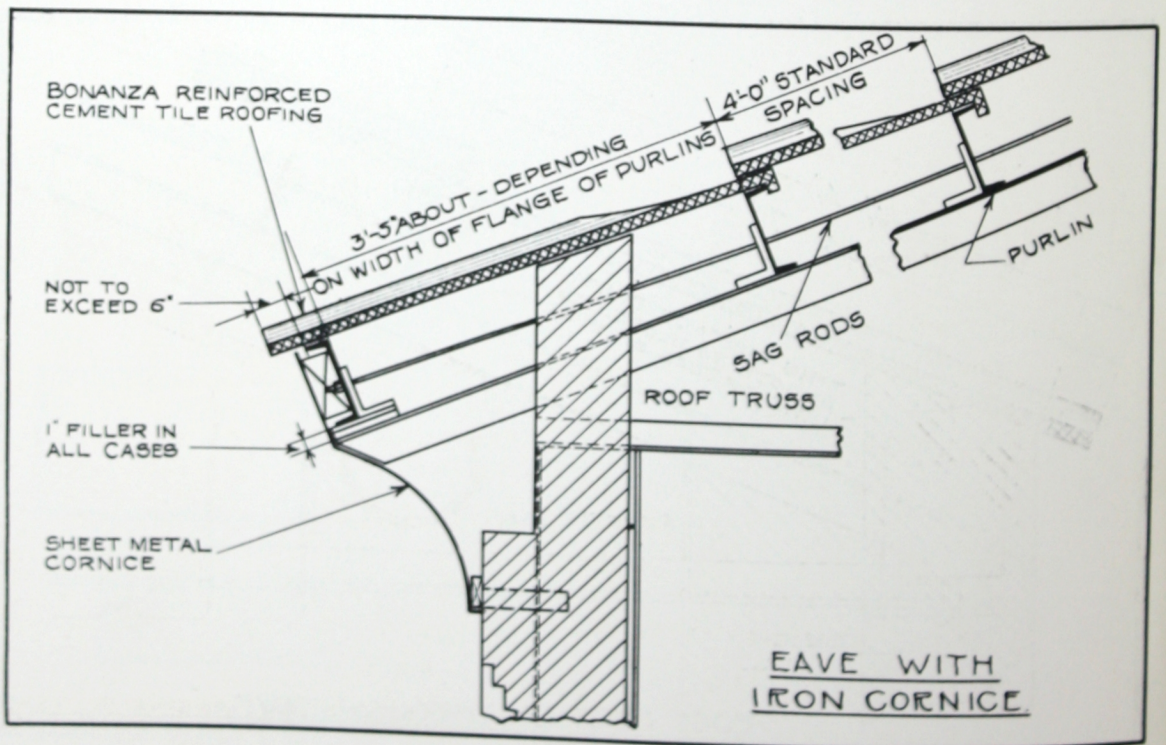
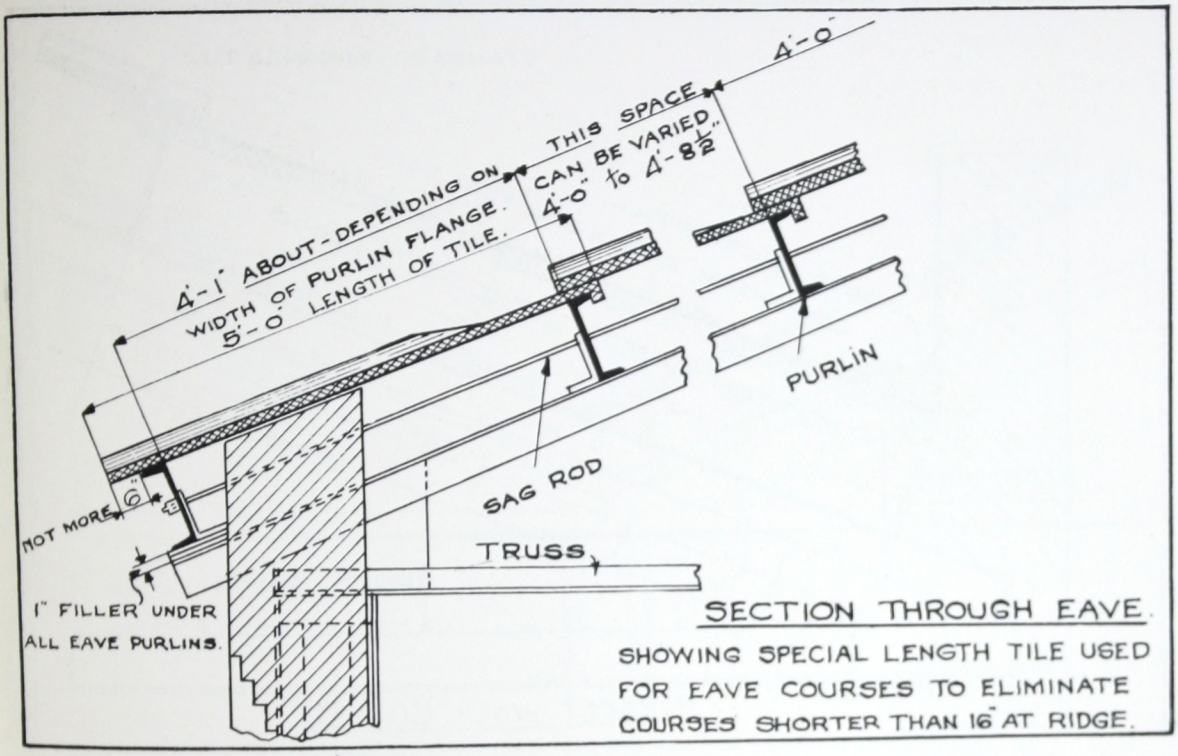


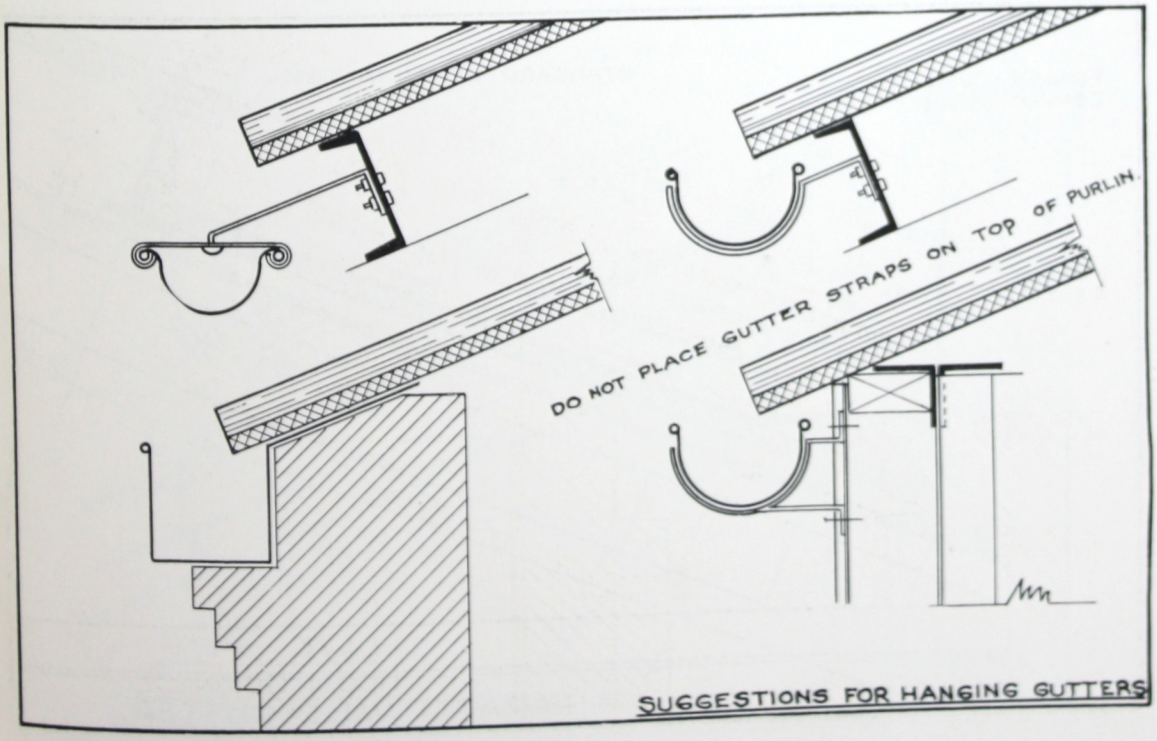
Plate 9



SECTION THROUGH EAVE.

SHOWING SPECIAL LENGTH TILE USED FOR EAVE COURSES TO ELIMINATE COURSES SHORTER THAN 16" AT RIDGE.

Plate 10



SUGGESTIONS FOR HANGING GUTTERS

Plate 11

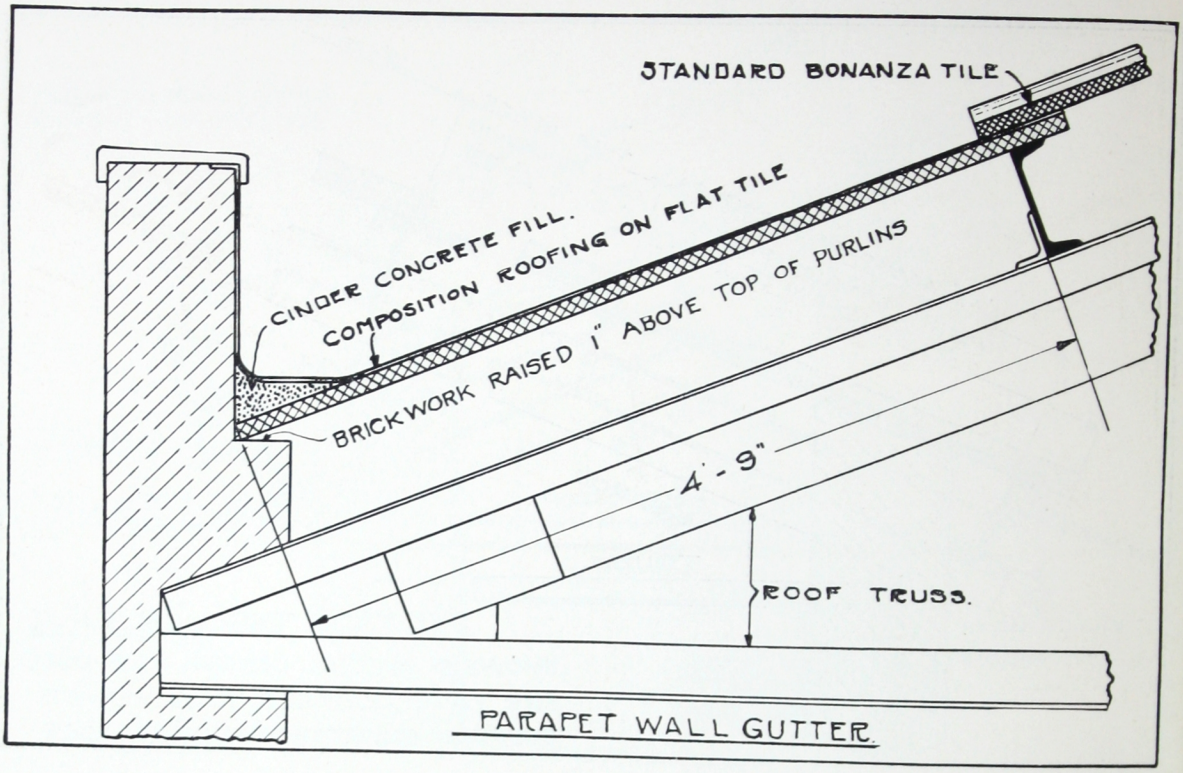


Plate 12

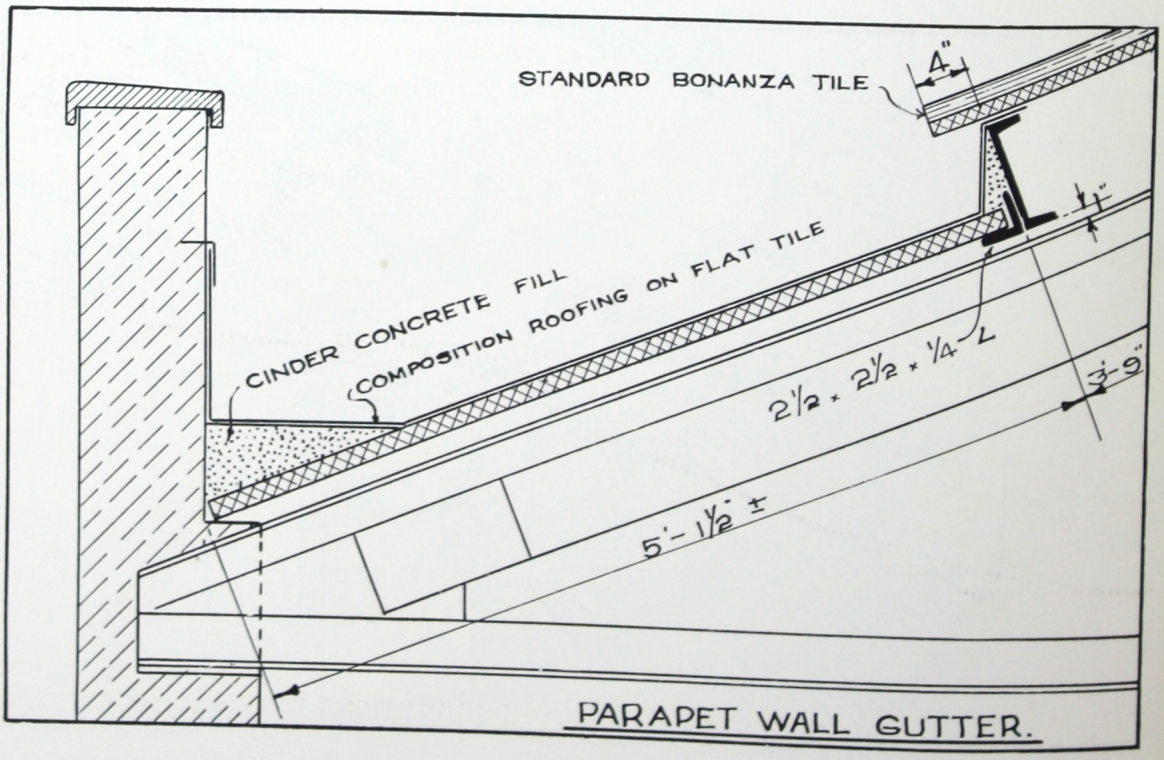
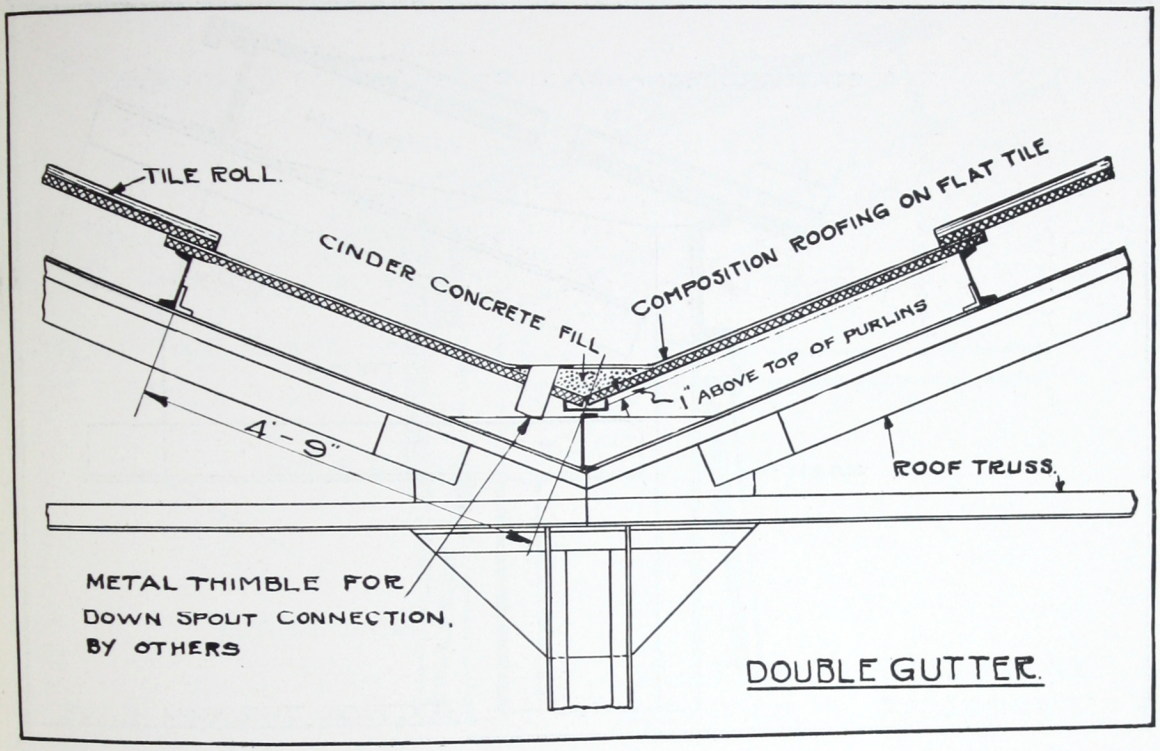
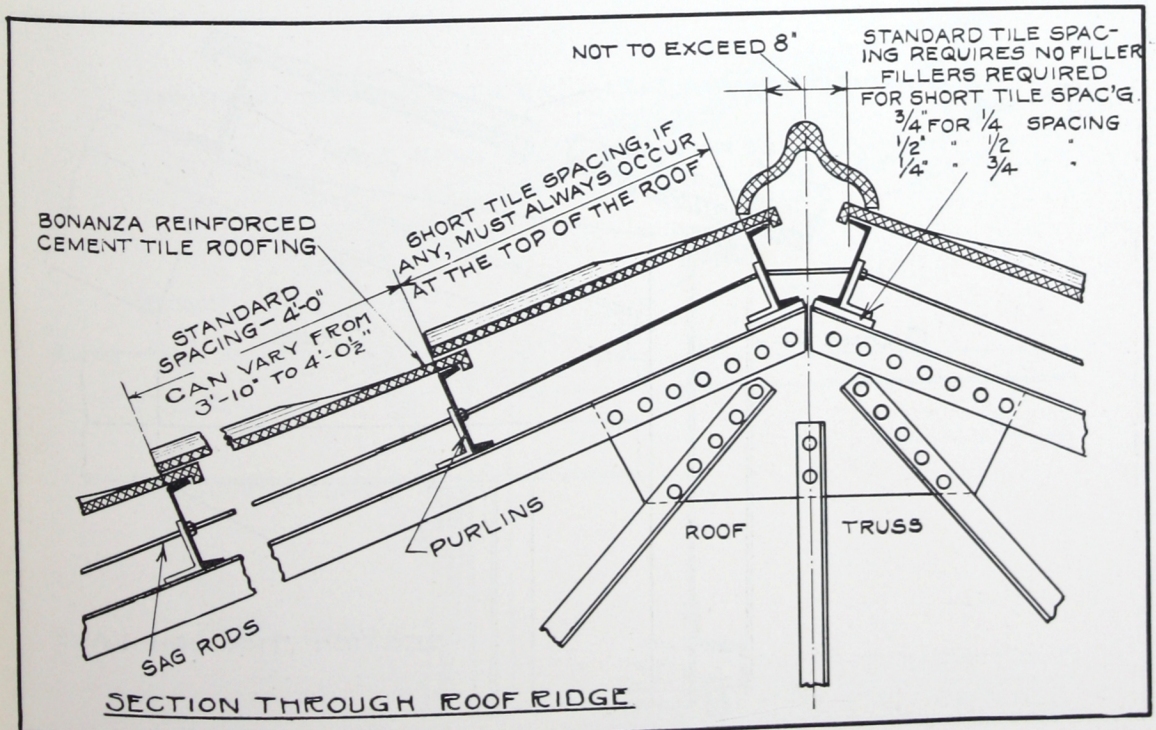


Plate 13



DOUBLE GUTTER.

Plate 14



SECTION THROUGH ROOF RIDGE

Plate 15

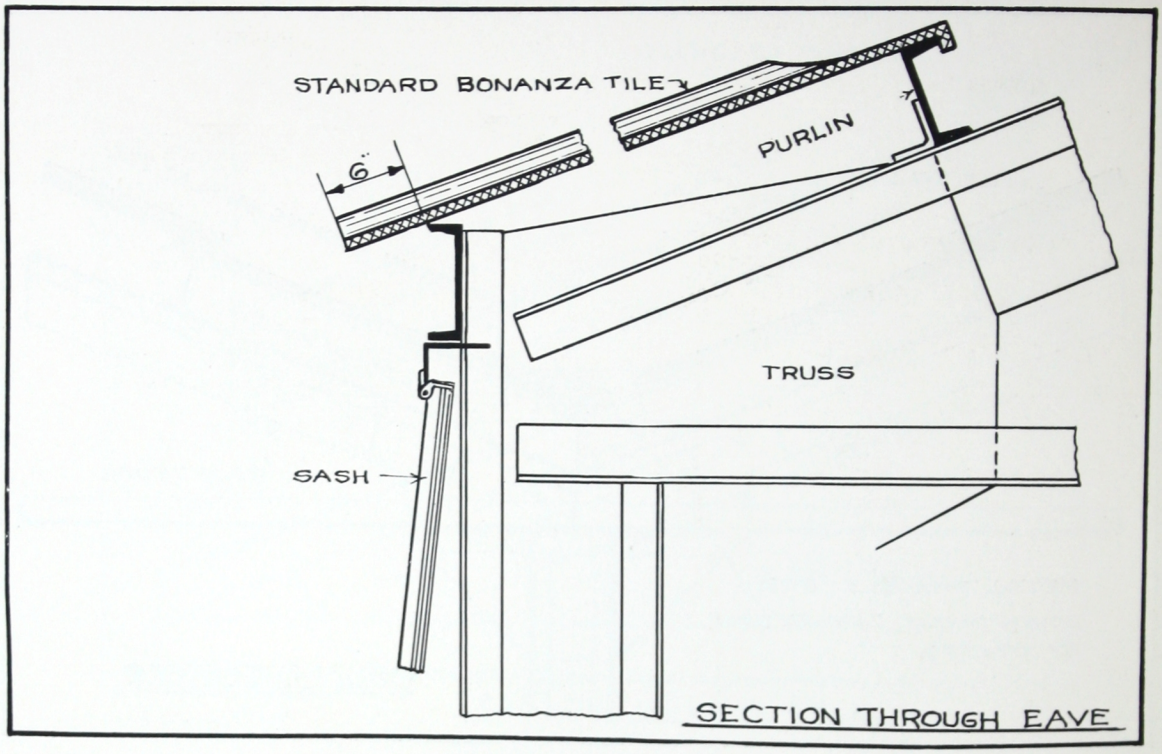
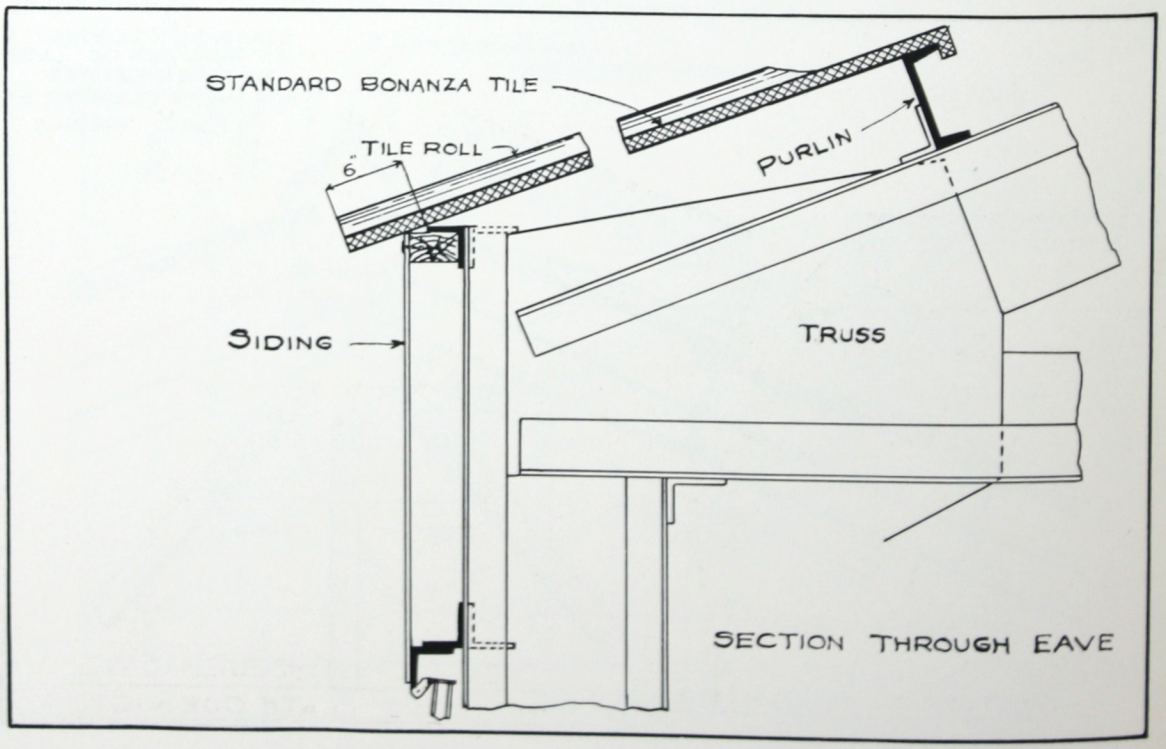


Plate 16



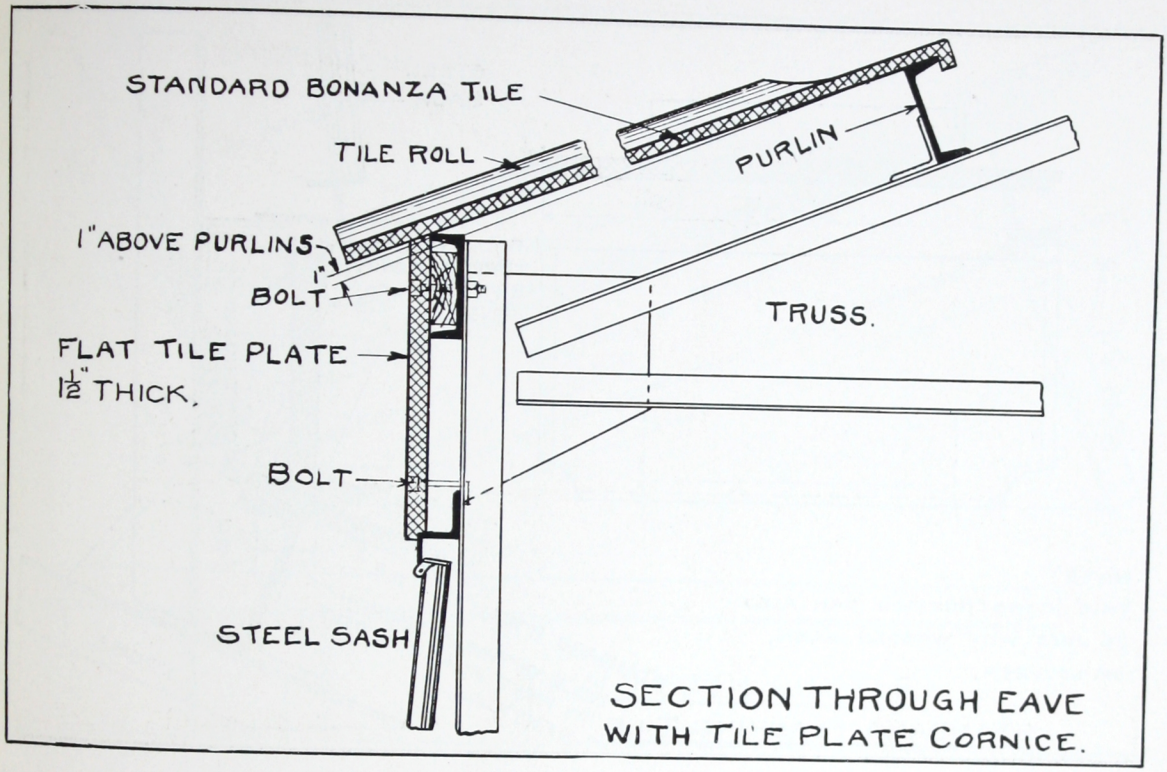


Plate 17

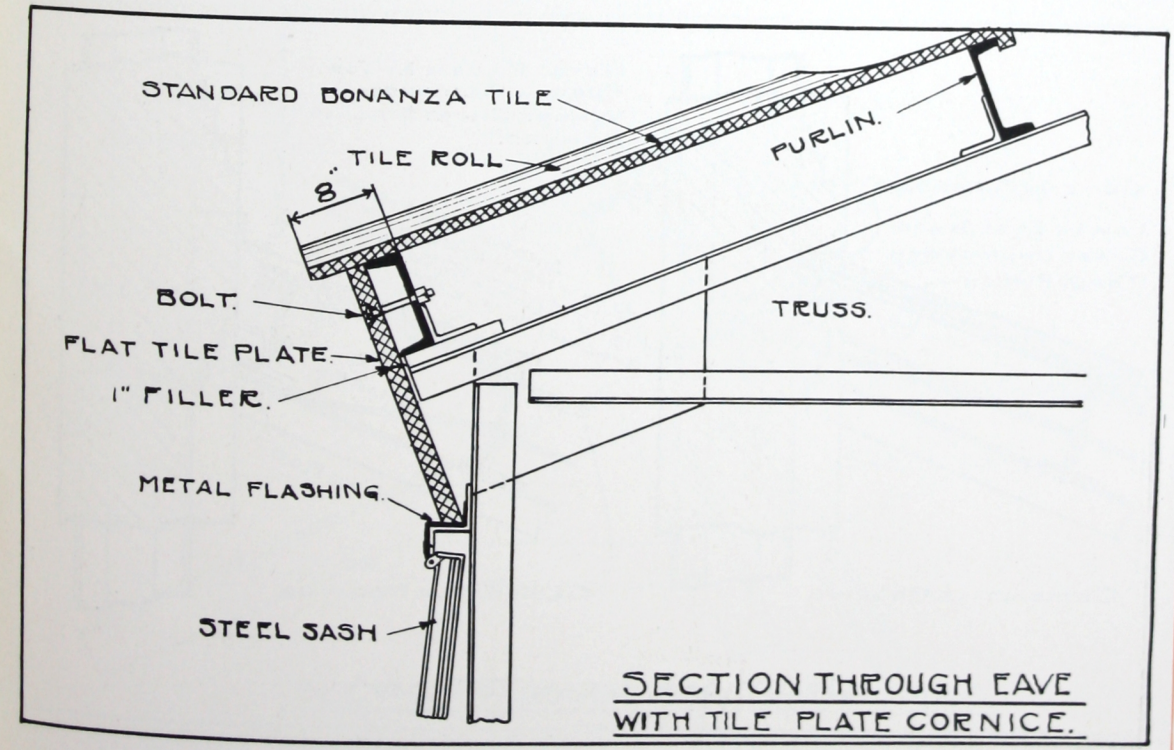
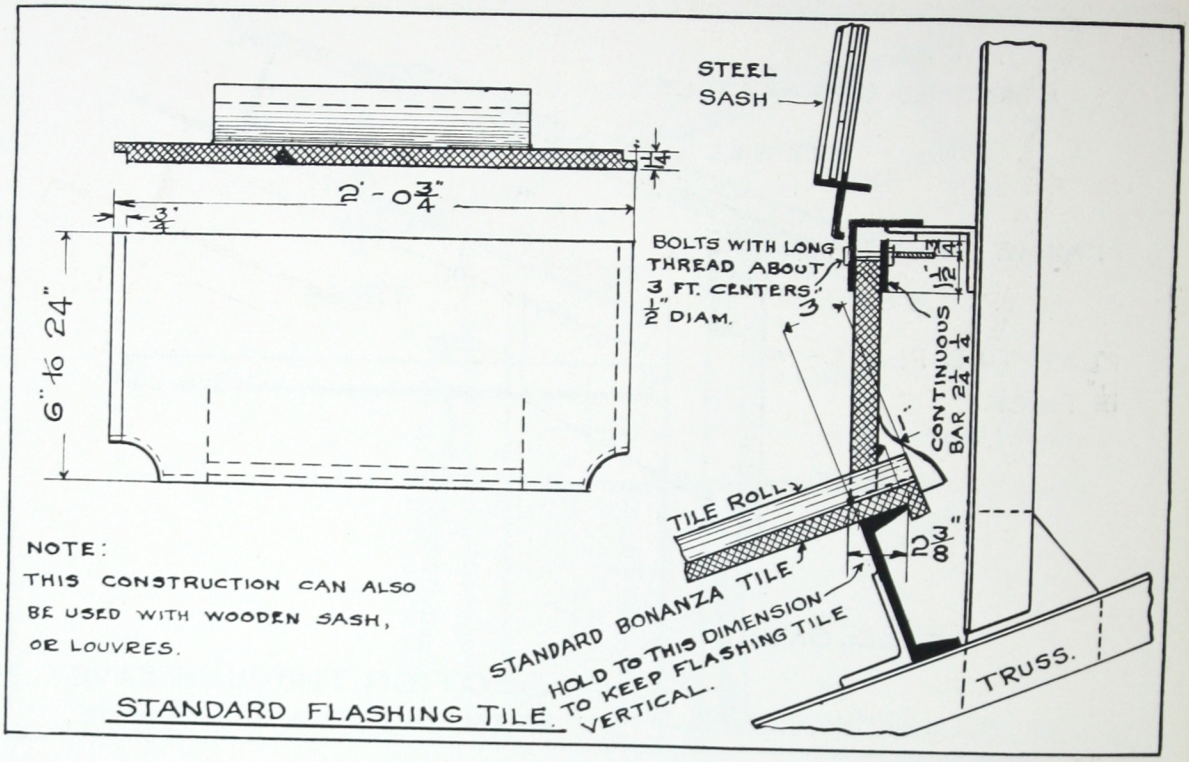


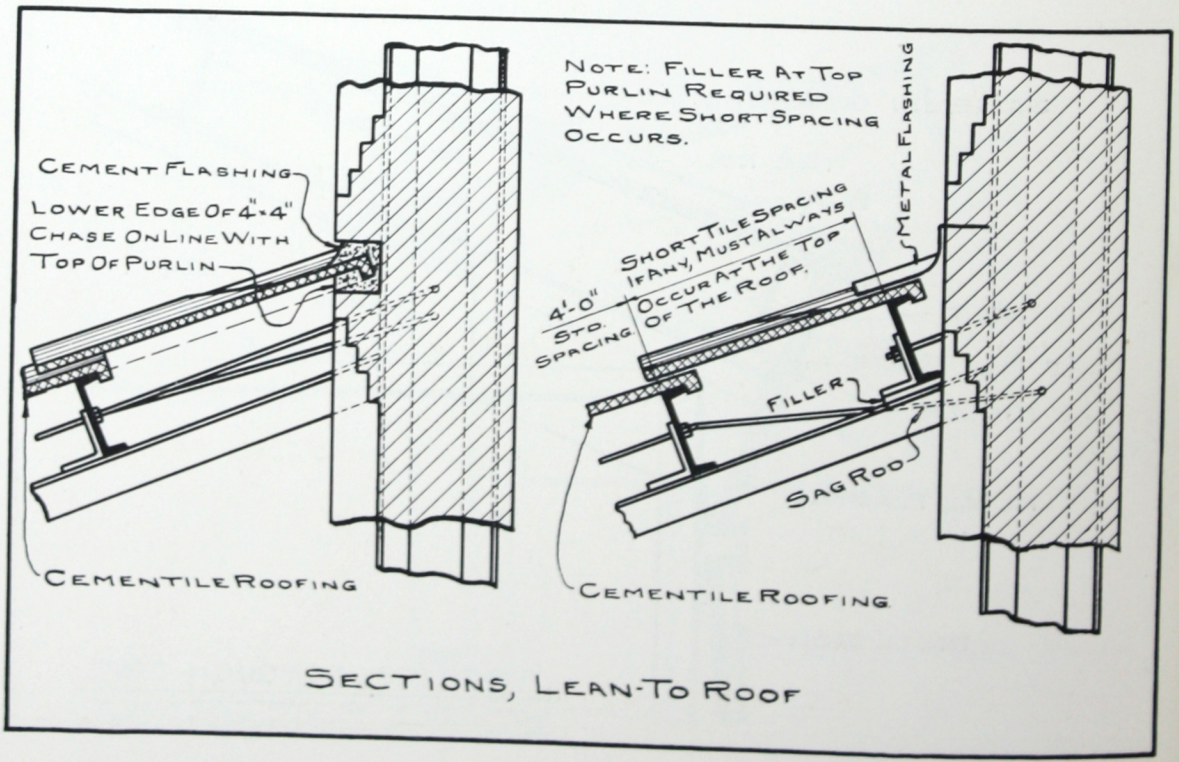
Plate 18

Plate 19



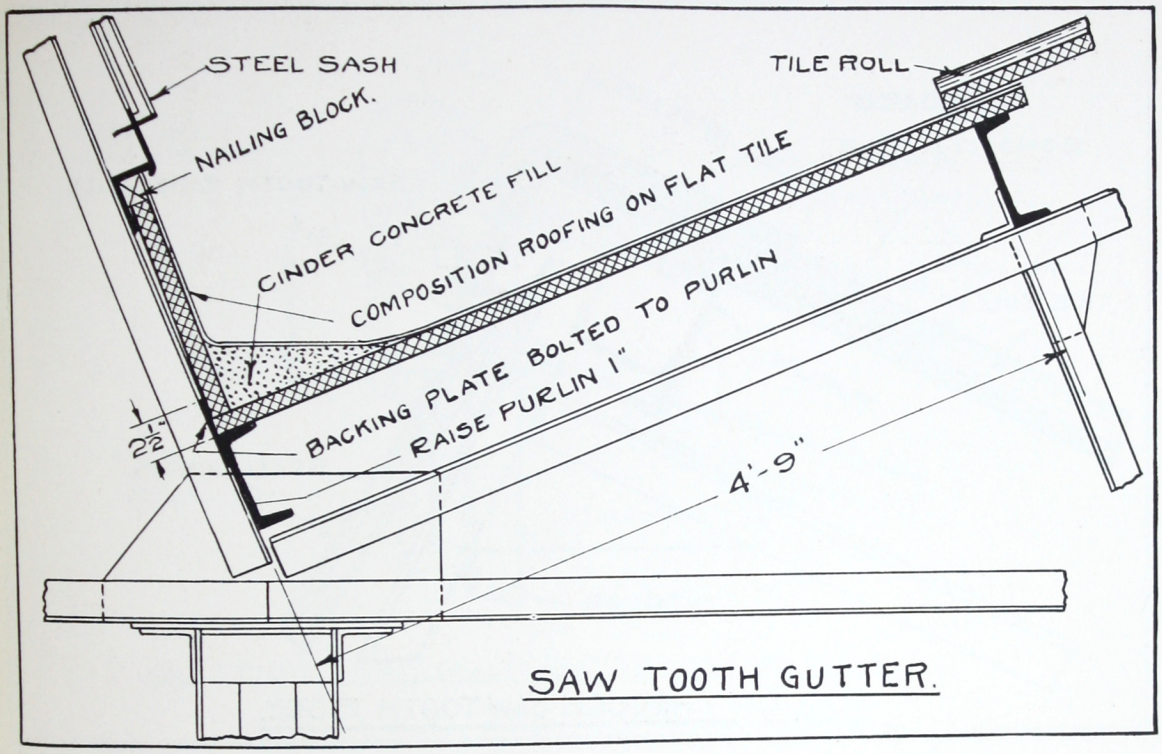
STANDARD FLASHING TILE.

Plate 20



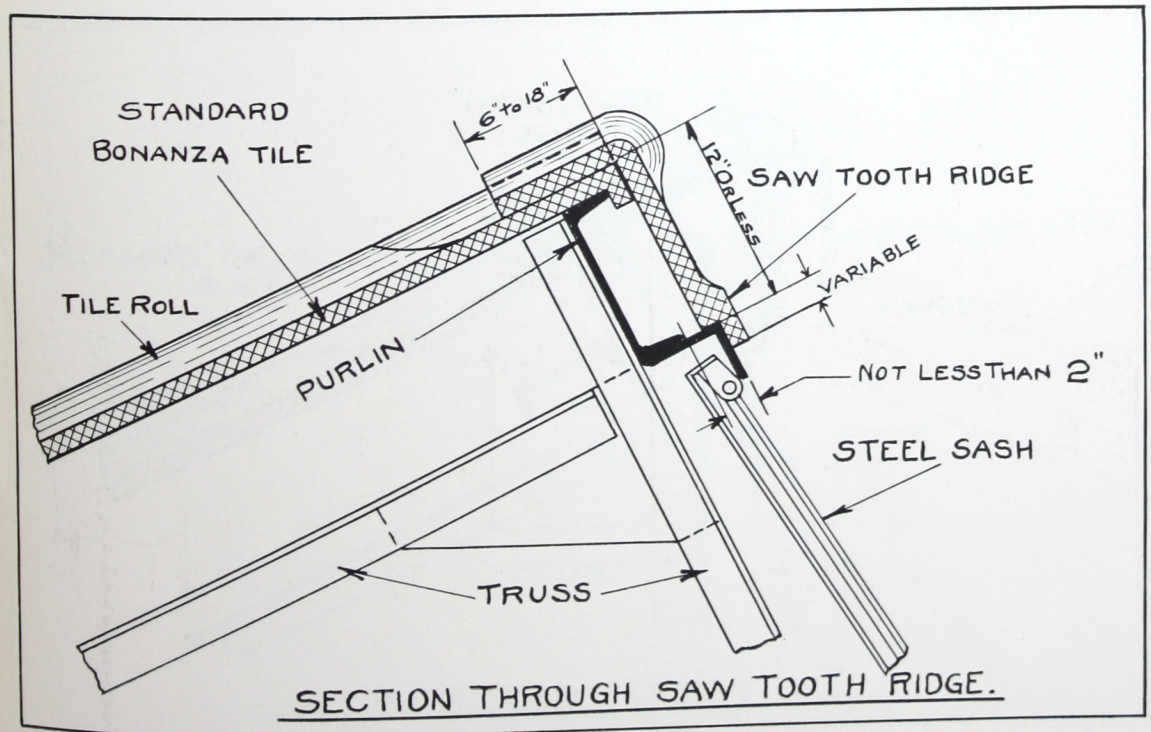
SECTIONS, LEAN-TO ROOF

Plate 21



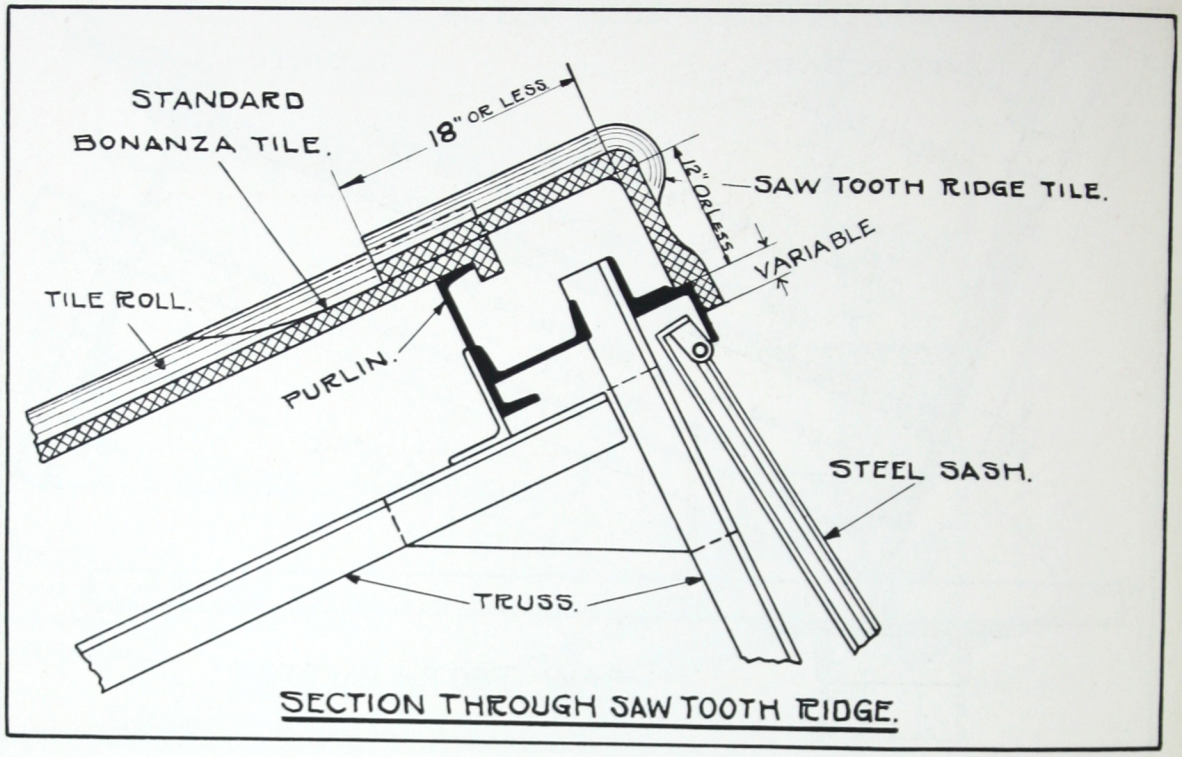
SAW TOOTH GUTTER.

Plate 22



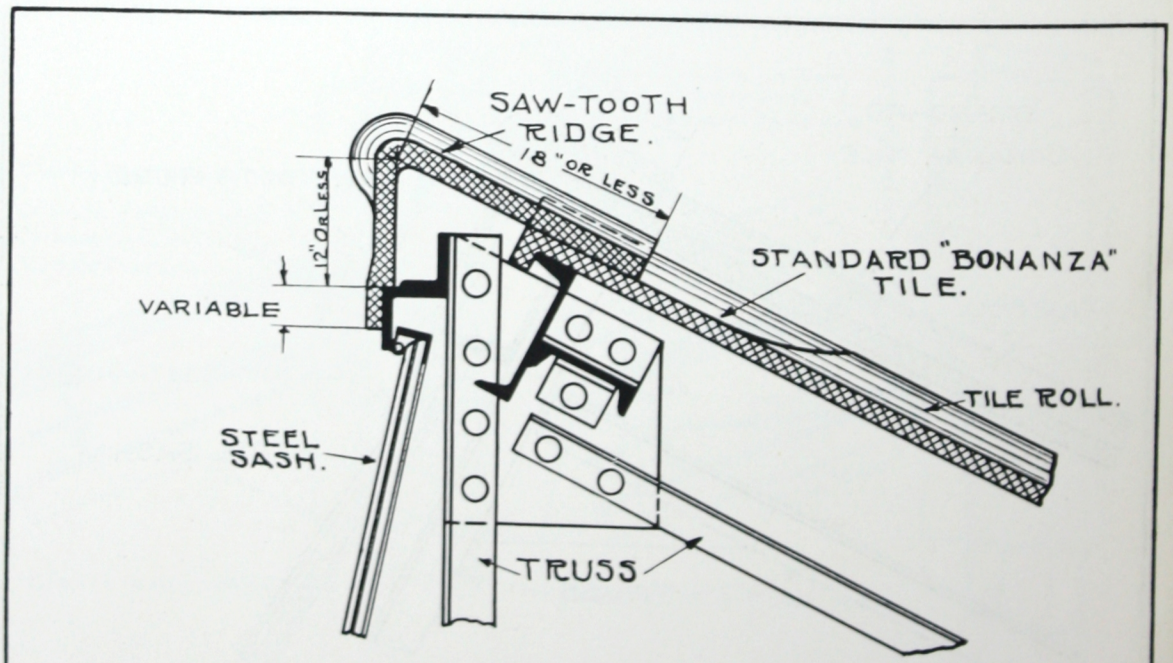
SECTION THROUGH SAW TOOTH RIDGE.

Plate 23



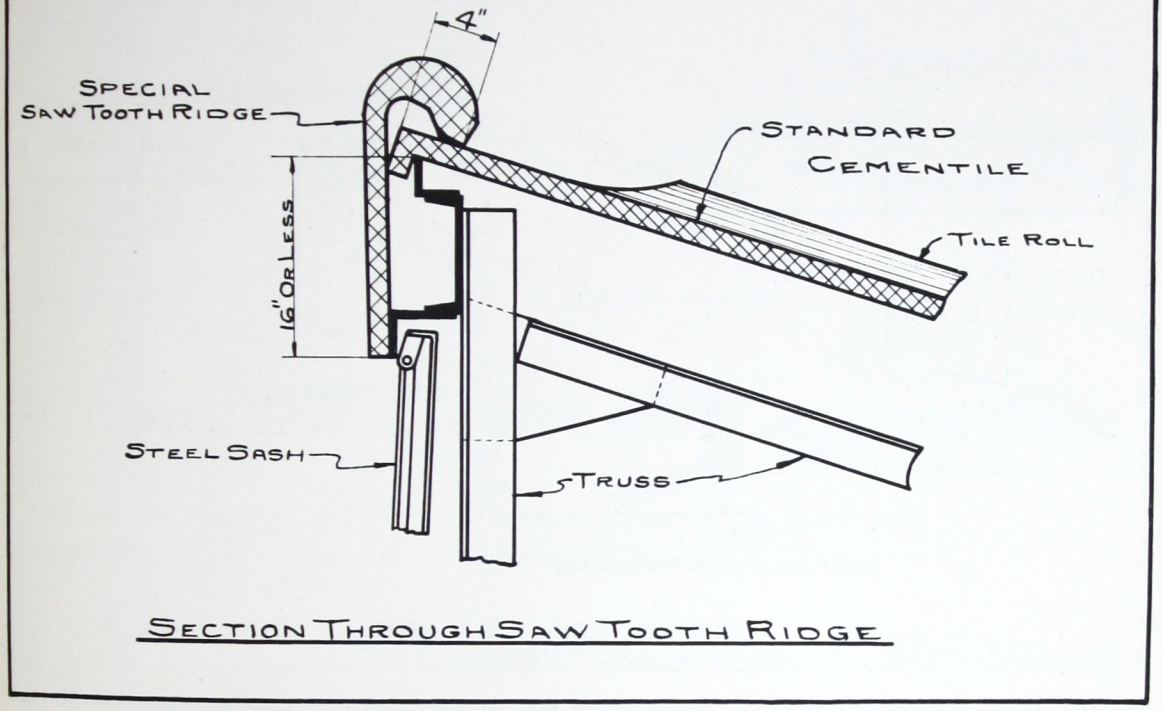
SECTION THROUGH SAW TOOTH RIDGE.

Plate 24



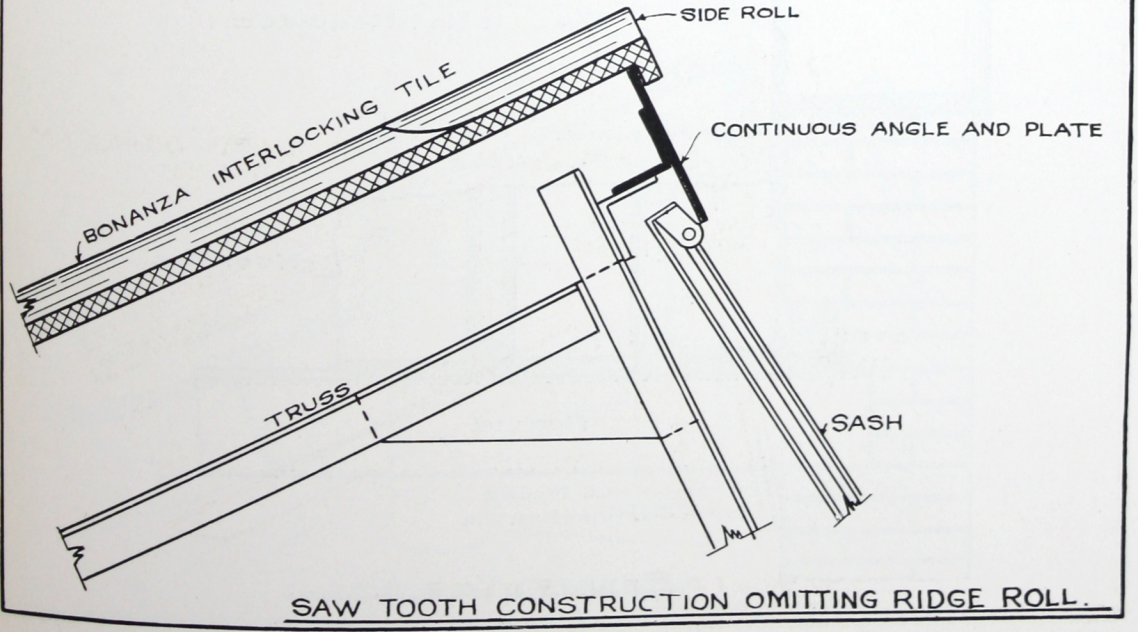
SAW-TOOTH RIDGE.

Plate 25



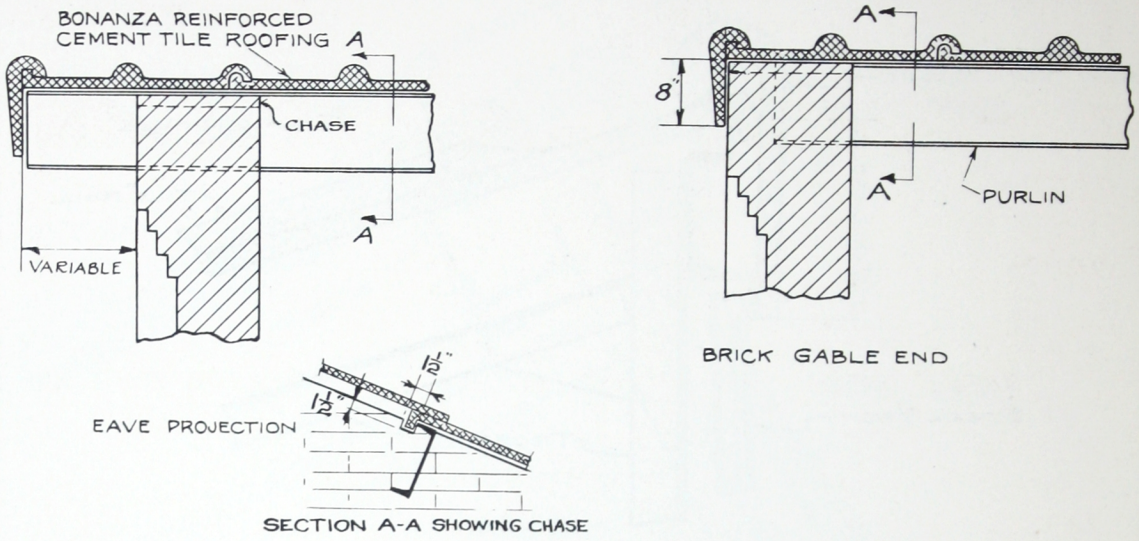
SECTION THROUGH SAW TOOTH RIDGE

Plate 26



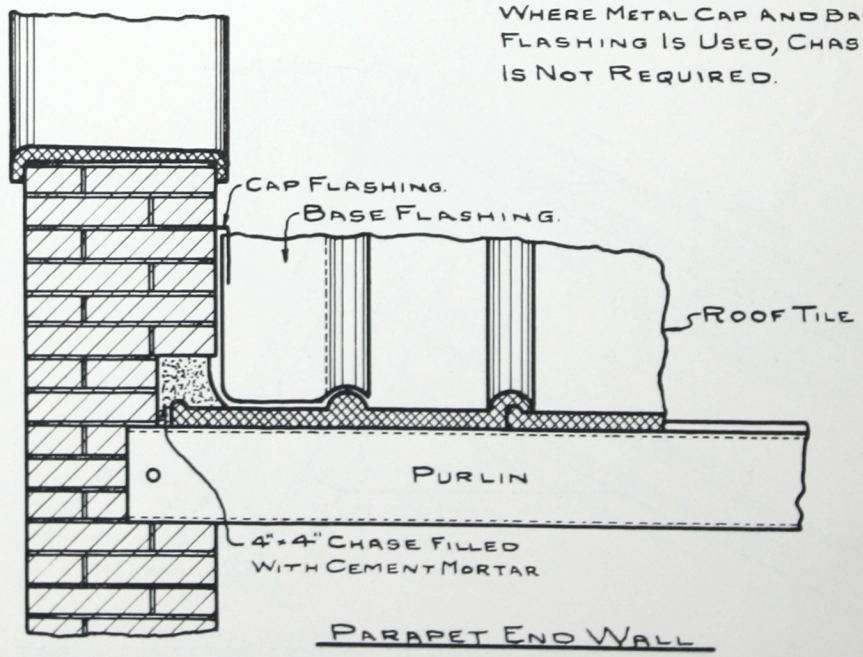
SAW TOOTH CONSTRUCTION OMITTING RIDGE ROLL.

Plate 27

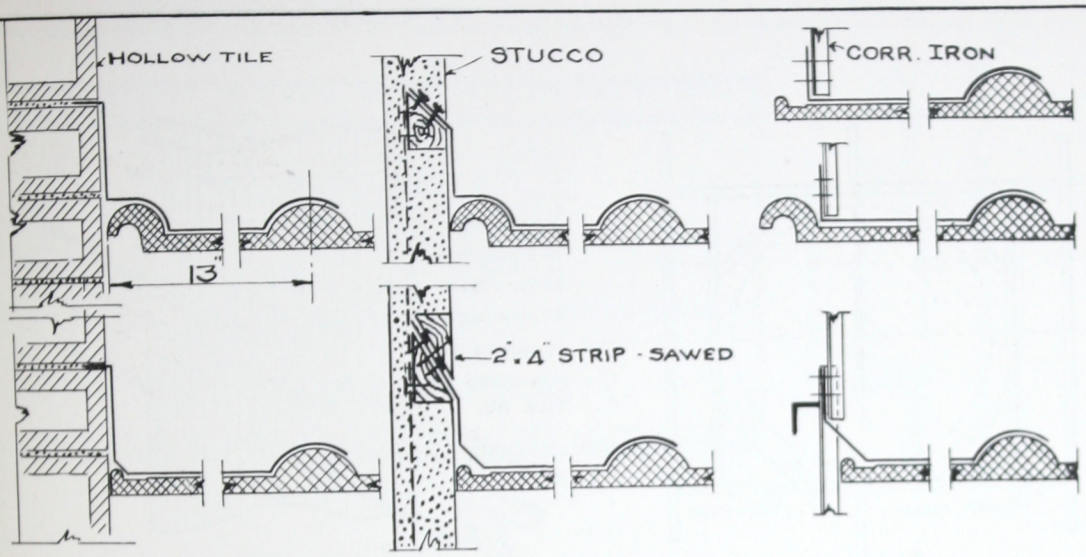


SECTIONS THRO' GABLE ENDS
SHOWING END FINISHING TILE.

Plate 28



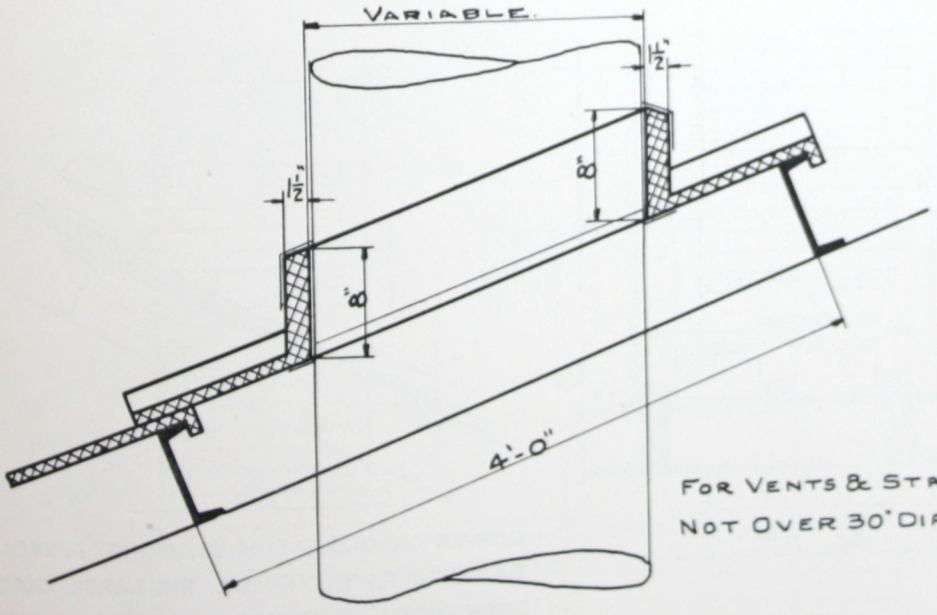
PARAPET END WALL



SEPARATE SHEETS OF FLASHING TO BE FURNISHED FOR EACH TILE.
COPPER OR SHEET LEAD IS RECOMMENDED

METAL FLASHING AT GABLE WALLS

Plate 29

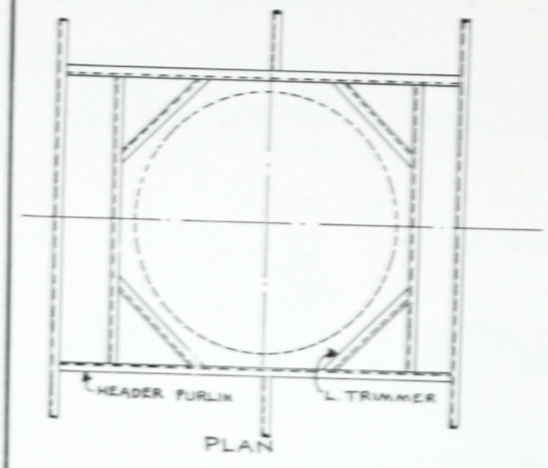


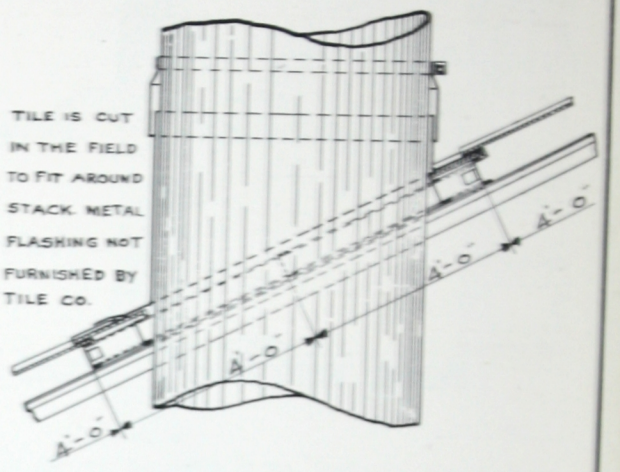
FOR VENTS & STACKS
NOT OVER 30" DIAM.

STANDARD COLLAR TILE

Plate 30

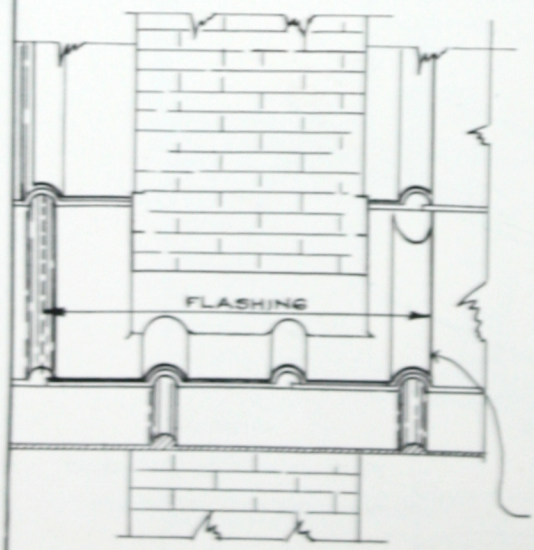
Plate 31

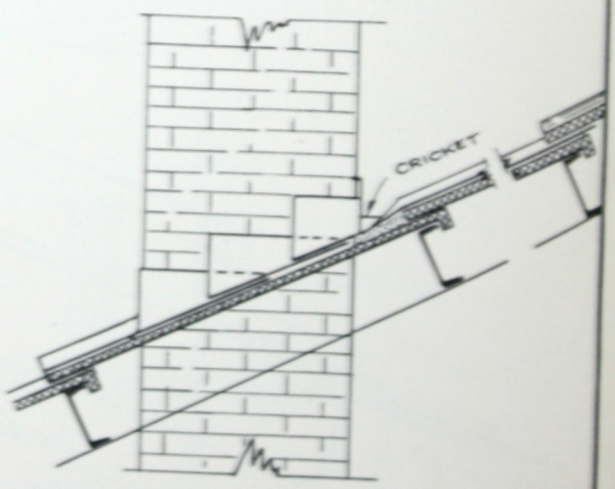




TYPICAL STACK FRAMING

Plate 32

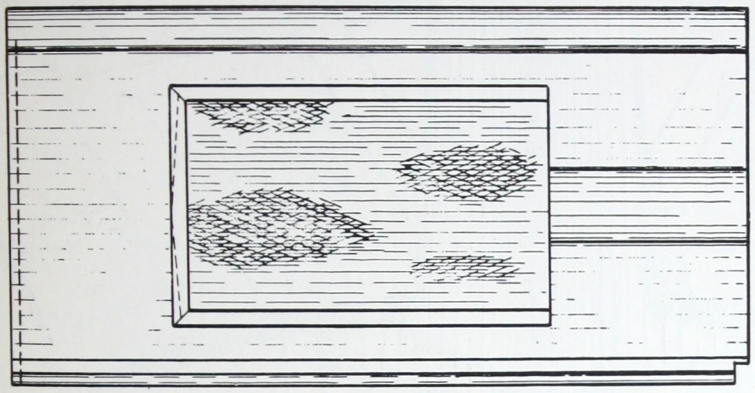


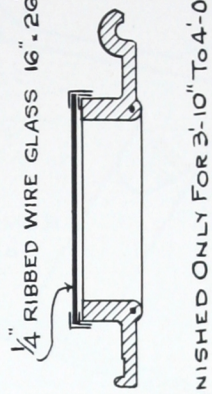


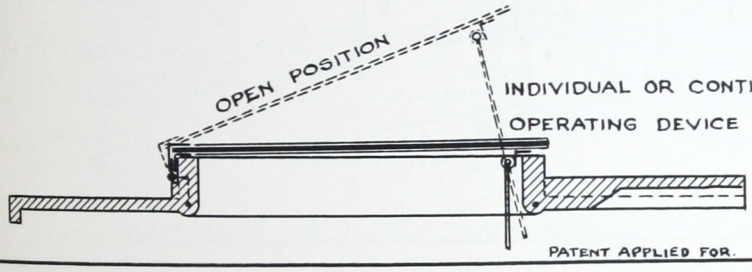
COPPER OR SHEET LEAD FLASHING FORMED ON JOB TO FIT TILE ROLLS. FOR LARGE STACKS BRICK CORBEL OR FRAMING REQUIRED TO SUPPORT TILE.

FLASHING AT CHIMNEYS

Plate 33

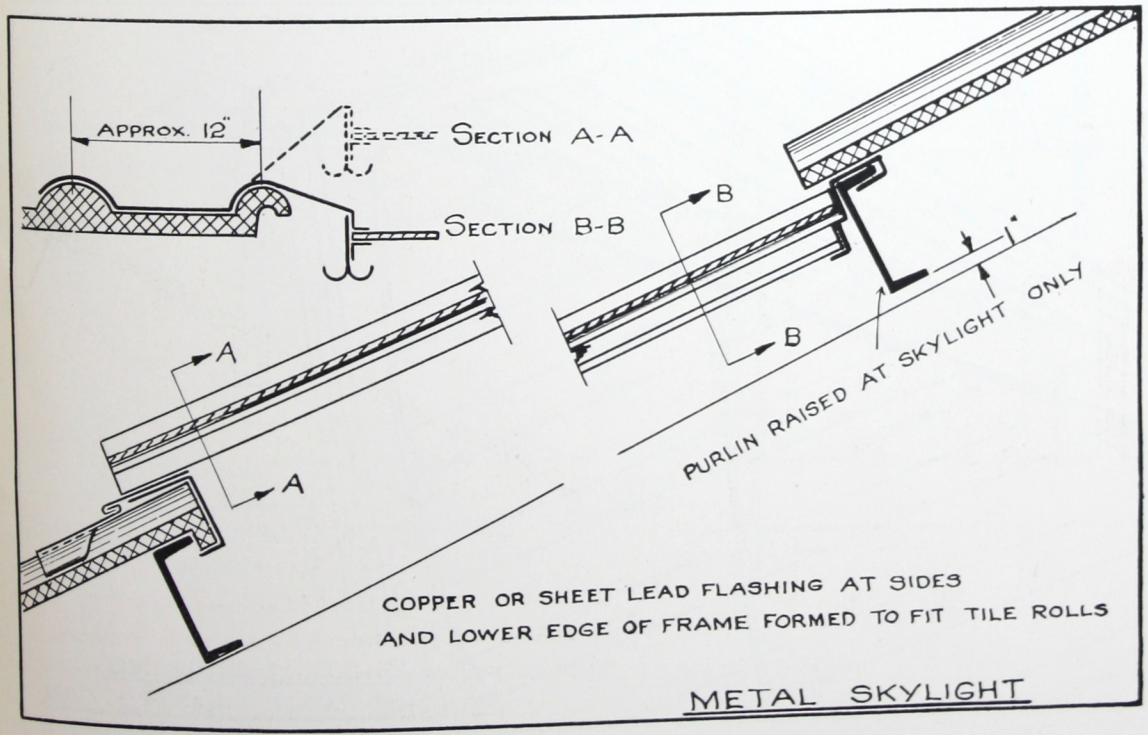






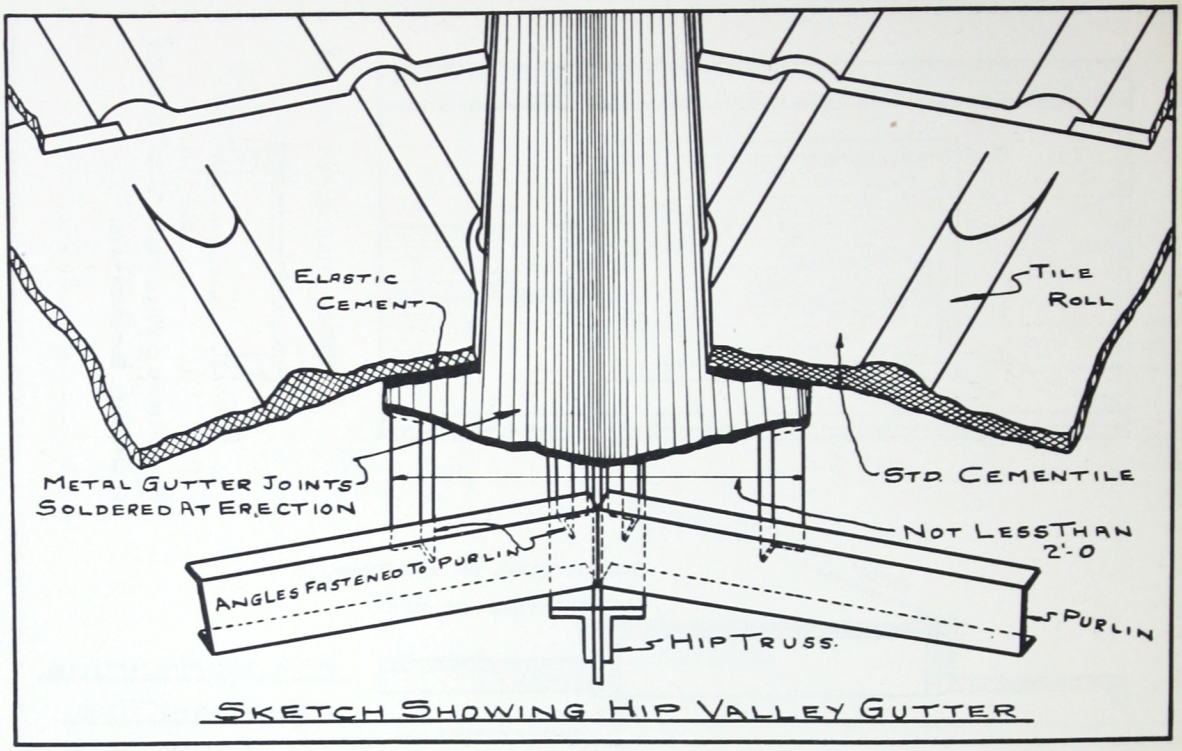
STD. VENTILATING SKYLIGHT TILE.

Plate 34



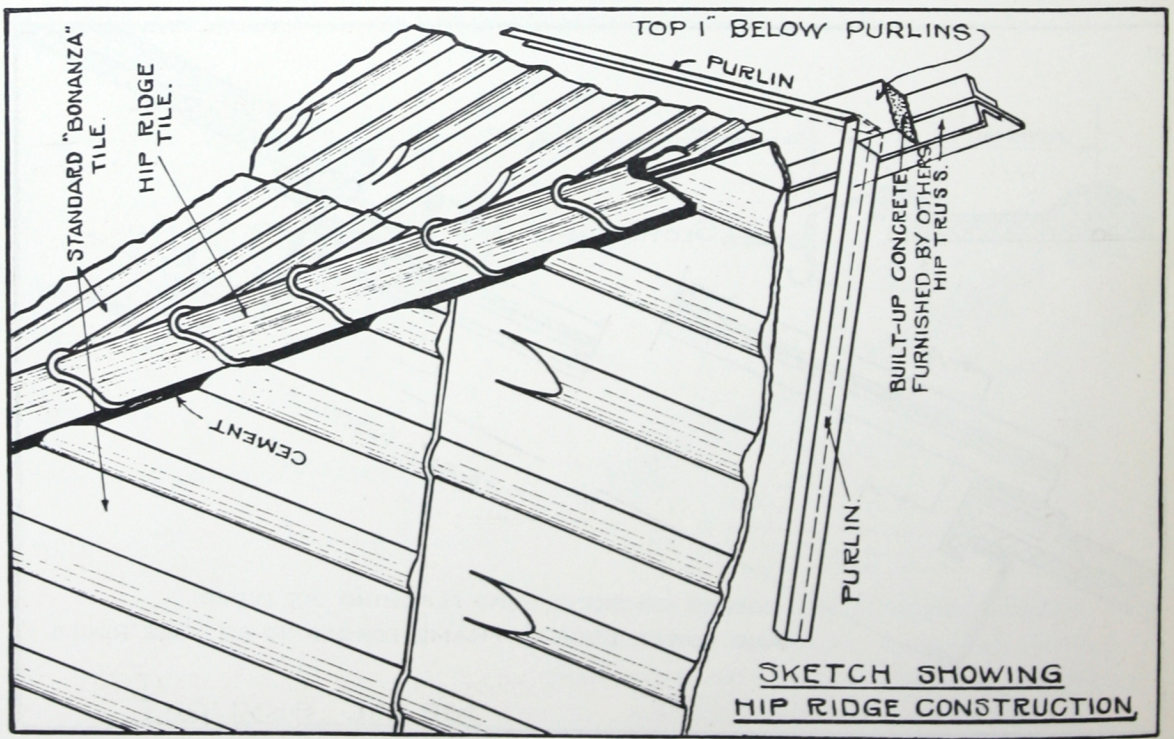
METAL SKYLIGHT

Plate 35



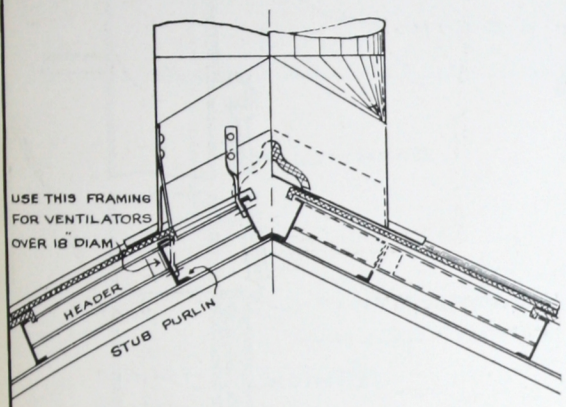
SKETCH SHOWING HIP VALLEY GUTTER

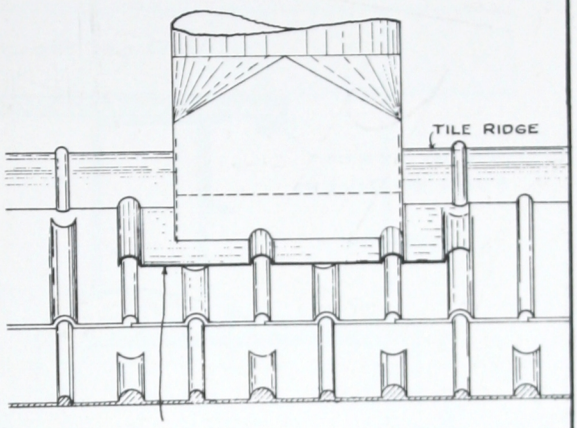
Plate 36



SKETCH SHOWING HIP RIDGE CONSTRUCTION

Plate 37





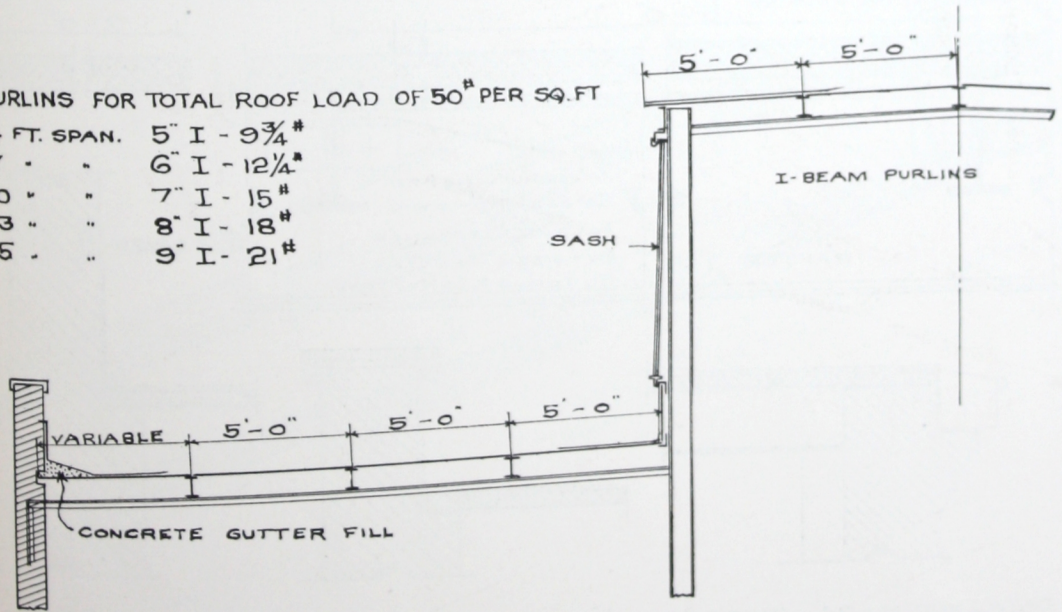
COPPER OR SHEET LEAD APRON FURNISHED WITH VENTILATOR AND FORMED ON JOB TO FIT TILE ROLLS.

METAL VENTILATOR

Plate 38

PURLINS FOR TOTAL ROOF LOAD OF 50# PER SQ. FT

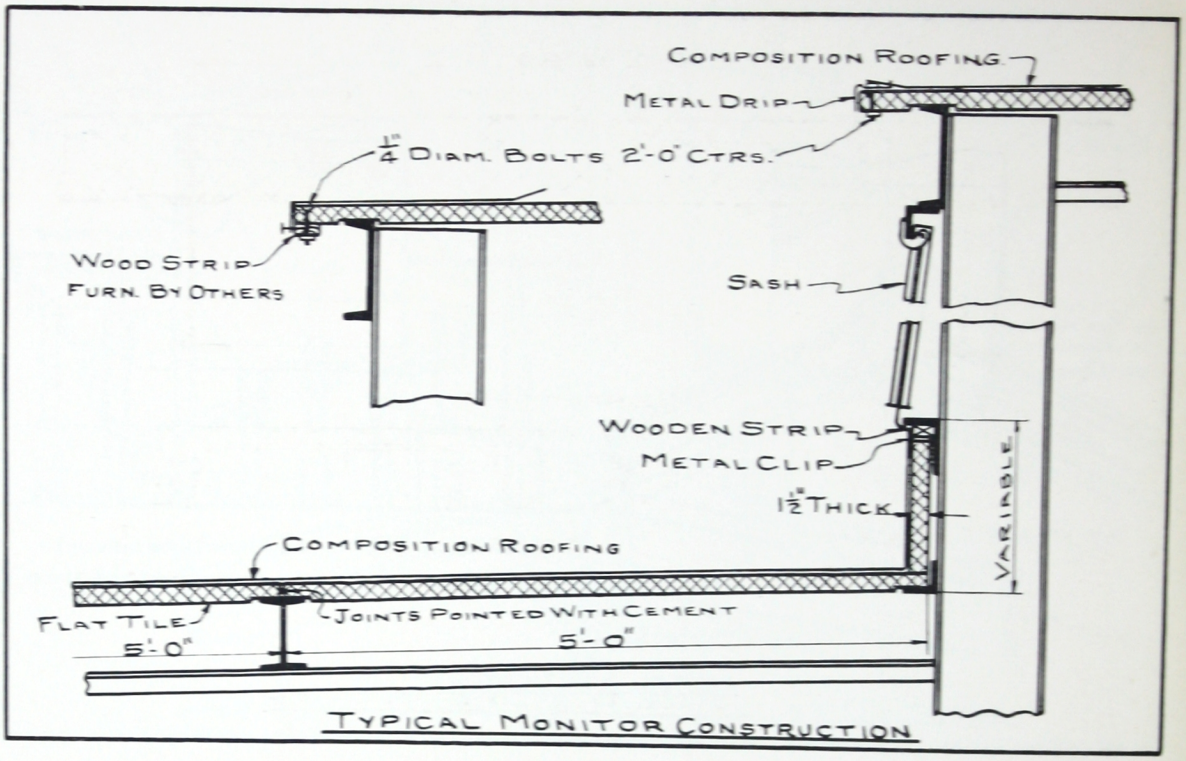
14 FT. SPAN.	5" I -	9¾#
17 " "	6" I -	12¼#
20 " "	7" I -	15#
23 " "	8" I -	18#
25 " "	9" I -	21#



PART CROSS SECTION SHOWING PURLIN SPACING FOR FLAT TILE.

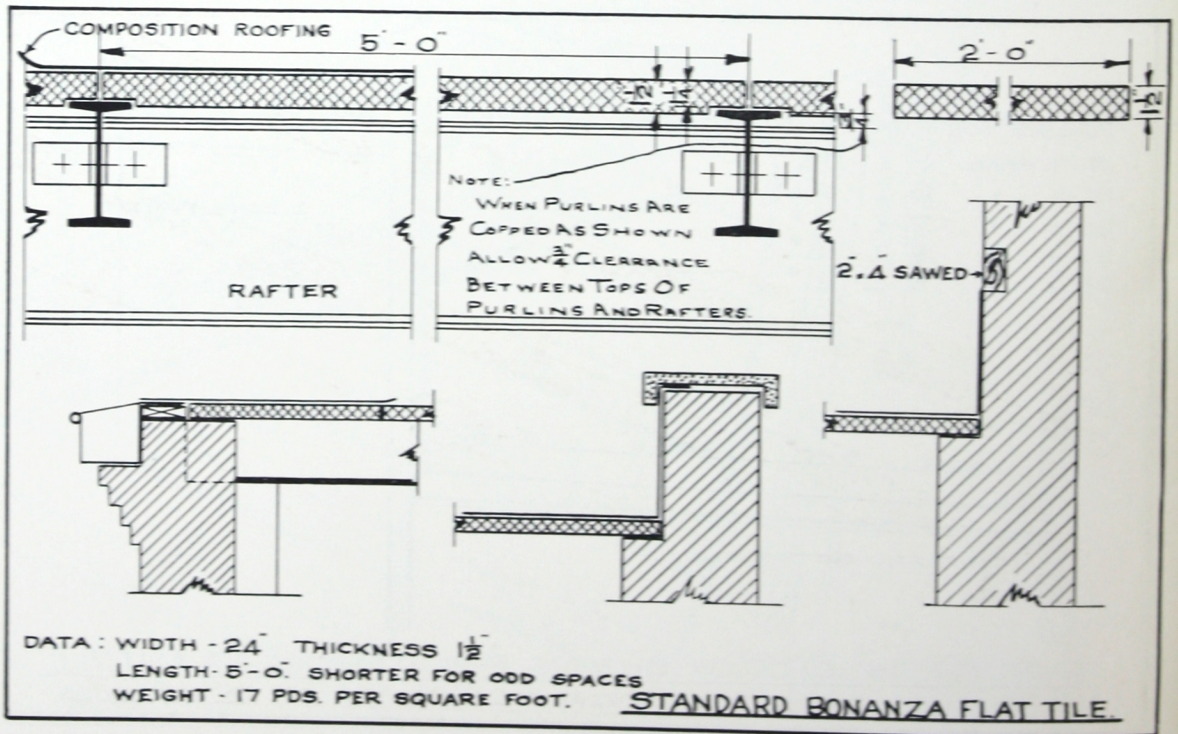
FOR DETAILS OF FLAT TILE SEE PLATES NO. 40 and 41.

Plate 39



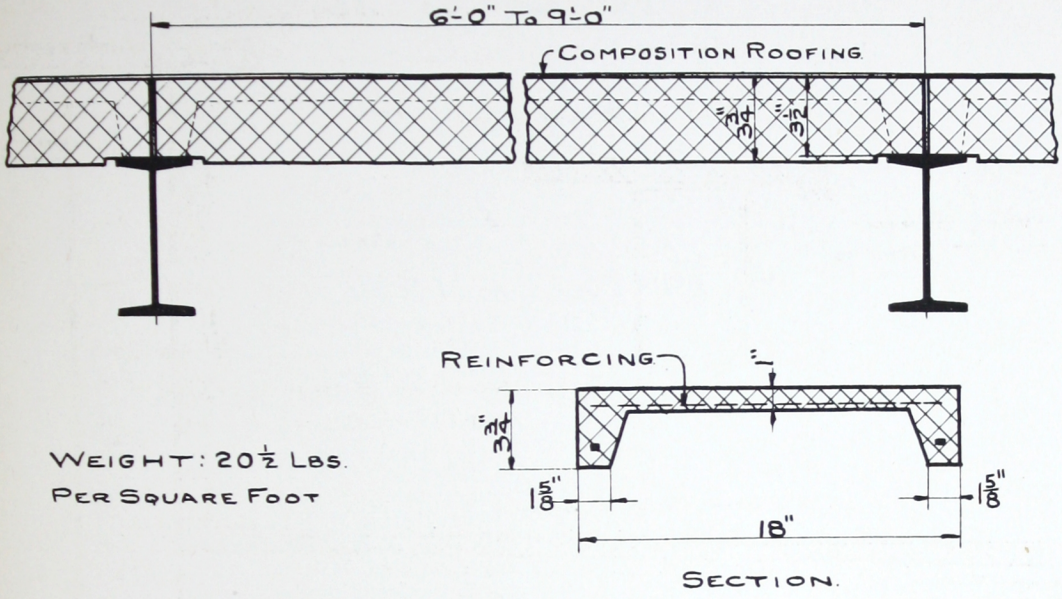
TYPICAL MONITOR CONSTRUCTION

Plate 40



STANDARD BONANZA FLAT TILE.

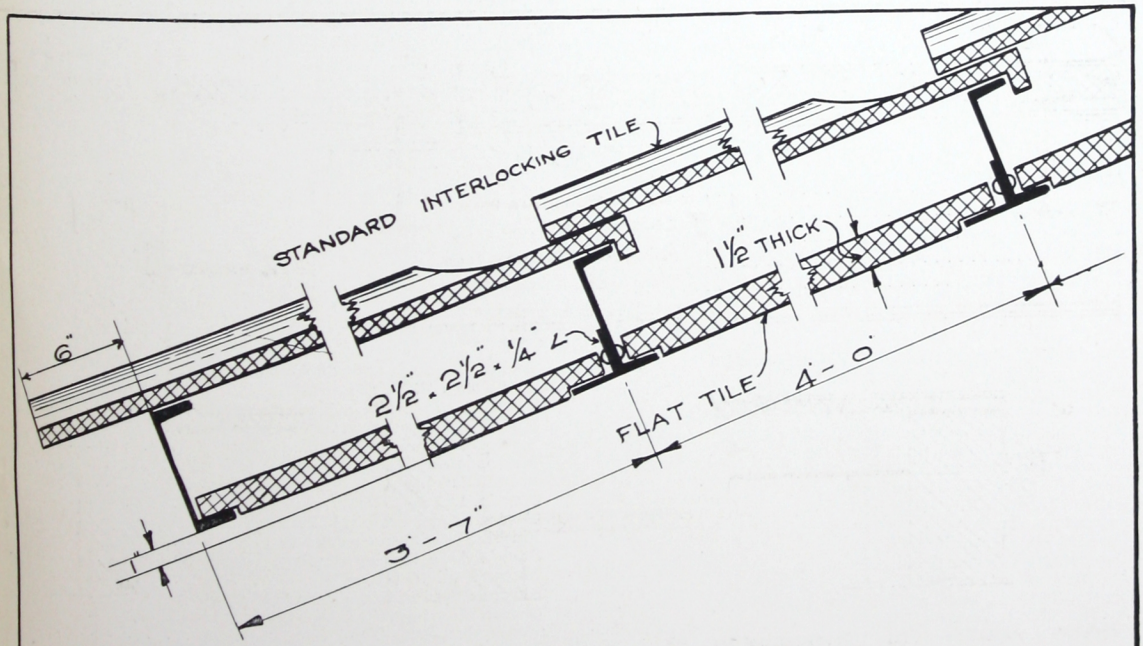
Plate 41



Weight: 20½ Lbs.
Per Square Foot

Channel Tile Construction

Plate 42



Combination of Interlocking and Flat Tile for Insulation.

INDEX

GENERAL

INSTALLATIONS

ENGINEERING DATA

DATA SHEETS

DESIGNED AND EXECUTED BY
BISSELL AND LAND, INC.
ADVERTISING COUNSELLORS
PITTSBURGH, PA.